Is the Big Bang Compatible with the Bible?

knowing God through Science…

Presented by
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Lesson: 12

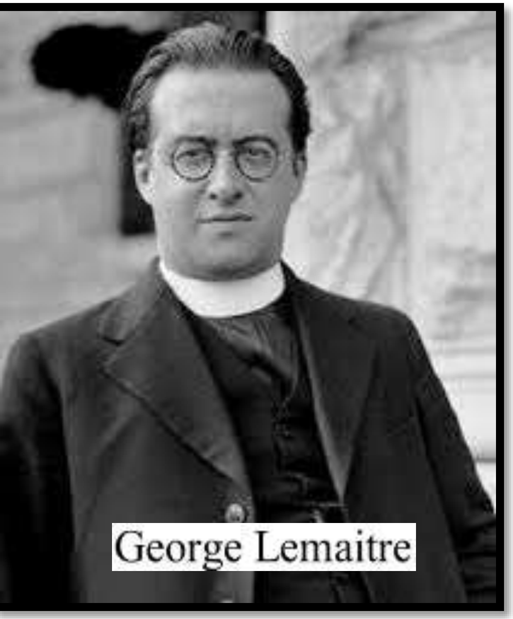
Biblical Creation & James Ussher Chronology of Earth

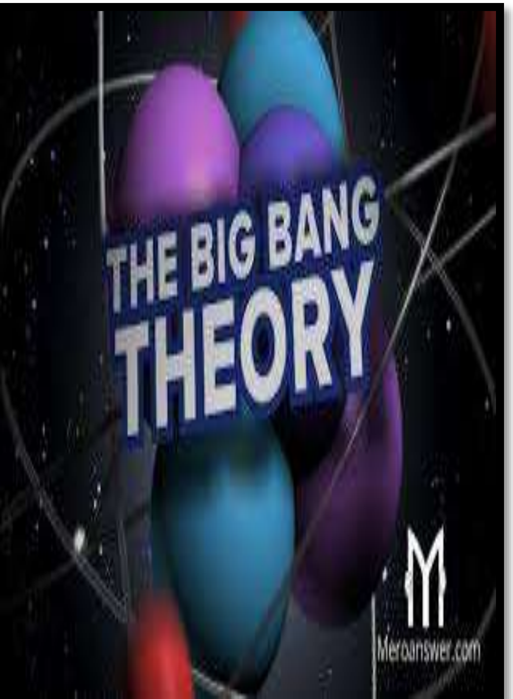
- **Biblical Creation**: In the Bible, there are two creation stories found in the first two chapters of the book of Genesis. In the first story(Gen 1:1-2:4) God, creates the heavens and the earth in six days, then rests on, blesses and sanctifies the Seventh.
- **Second Story**: In the second story(2:5-25) God, creates Adam, the first man, from dust and places him in the Garden of Eden, where he is given dominion over the animals. Eve, the first woman, is created from Adam and as his companion.
- **James Ussher(1581-1656)**: He was a prolific scholar and Ireland English Church Bishop. In 1654 he estimated based on the Julian Calendar that God created the world on 23rd day of October 4004 BC.
- **No Biblical Evidence**: He got this figure using evidence from the Bible and other Middle Eastern literature. The date became so popular that it was printed with the Book of Genesis. But the Bible does not say that the Earth was 6000 years Old.

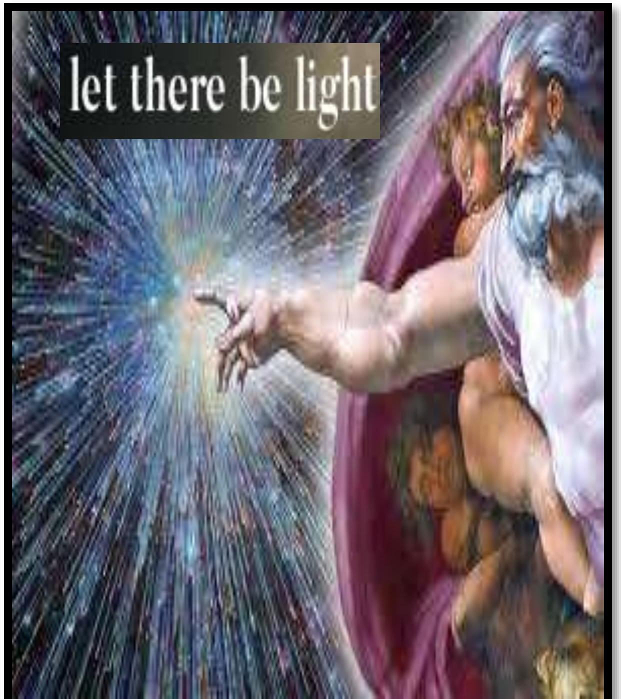
Four popular theories of the Origin of Universe:

- **Creationist Theory(Bible):** It states that God created the universe in seven days. This theory supported by the bible, but if this is true, the universe would be very young. Some people think that the universe is only 6,000 years old, if this theory is proven true.
- **Big Bang Theory(Georges Lemaitre):** It says that the universe was in a tiny ball, and then it exploded and become bigger and all of the stars and planets came into existence then. If the Big bang theory is correct, then it happened about 13.7 billion years ago. Most widely accepted theory by scientists today.
- **Steady State Theory(Fred Hoyle):** It proposes that the Universe is the same everywhere and for all time, both in the past and in the future. It says that the universe has no beginning or end in time. Now no-longer widely accepted in the scientific community.
- **Oscillating Universe Theory(Paul Steinhardt):** This theory was created after the Big bang theory and the Big Crunch Theory. Most Scientists agree that the universe is expanding. This is what is meant by Oscillating which is the forward and backwards motion of the expansion and contraction of the Universe. It is never ending cycle known as Oscillating universe.

George Lemaitre(1927)

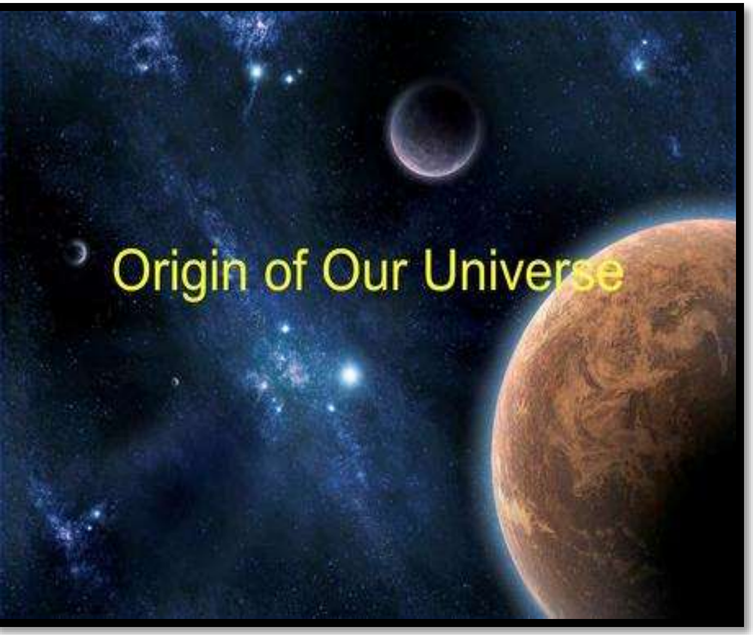




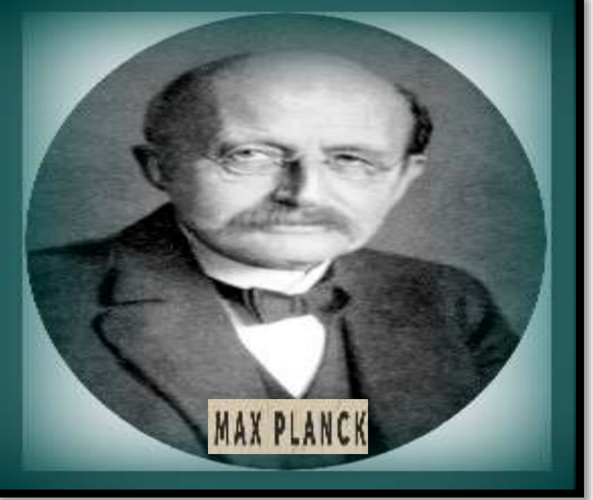


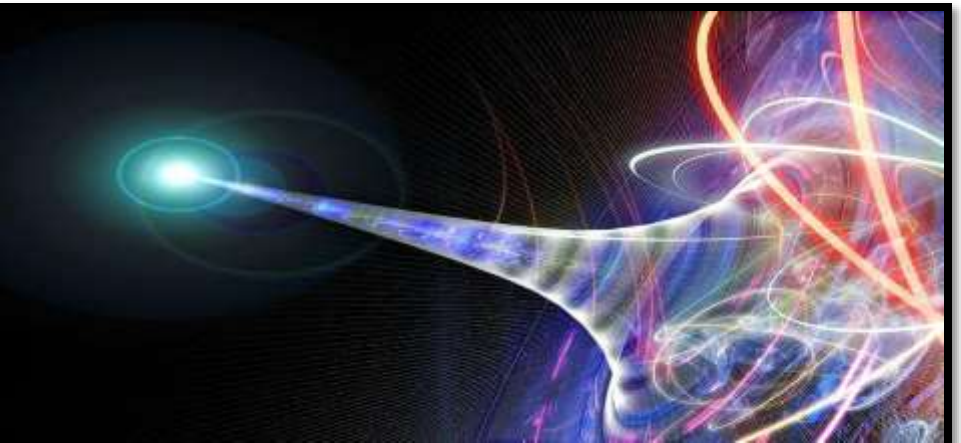
- **George Lemaitre**: He was a Belgian Jesuit Priest, Mathematician, Member of the Vatican's Pontifical Academy of Science, travelled with Albert Einstein for a series of seminars.
- **Primeval Atom**: He was the first scientist to suggest that the universe expanded from a **"Primeval atom"**. The universe was formed in a single dramatic moment of expansion. Later work by mathematicians and astrophysicists such as **Einstein, Friedman & Edwin Hubble** provided support for the theory.
- **His theory**: He was ridiculed and sarcastically nicknamed (by Scientist **Fred Hoyle**) the Big bang theory. Evidence has since been collected to support this theory and the name struck.

What is Big bang Theory?



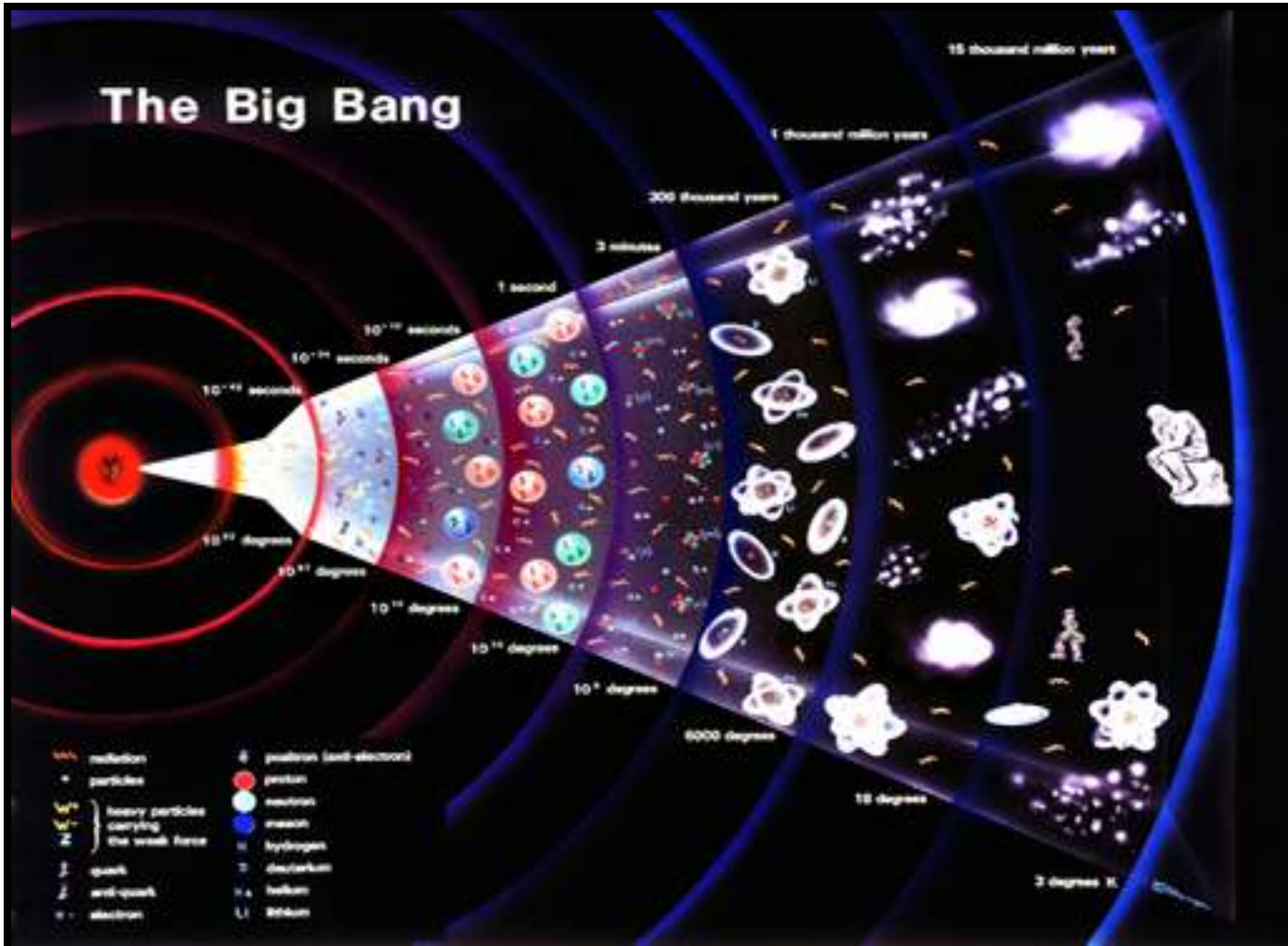
- **Big Bang Theory**: It is a Scientific theory about how the Universe began. At one time, the entire universe was confined to a dense, Hot, Super massive ball of hydrogen. Then a violent exposition triggered the rapid expansion of that Massive ball of Hydrogen. The universe expanded very quickly.
- **Beginning of Physics**: The Big Bang was an explosion that supposedly occurred 13.7 billion years ago. This explosion was considered the beginning of the universe. Within 3 seconds, all the basic elements had formed.
- **Solar System**: Our sun was formed around 5 bya. By around 300 Million Year ago, all stars and Planets formed. Earliest life forms evolved around 3.8 mya. Human evolved around 600,000 years ago.
- **Proved Theory**: Scientists thinking that the Big bang created **space, time, energy and matter**. It is the best evidence-based explanation we have at present for how everything began. The Big bang theory was accepted as the standard model of cosmology. In 1978, Penzias and Wilson were rewarded with the Nobel Prize for Physics for their discovery of cosmic radiation, which proves Big Bang theory.



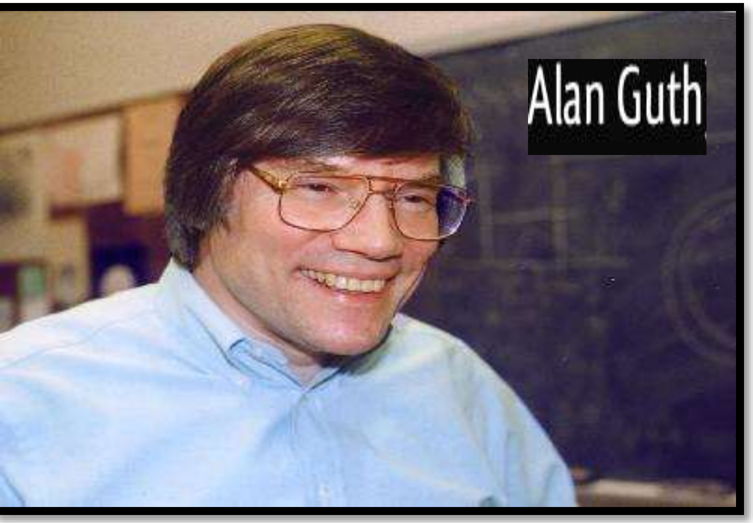


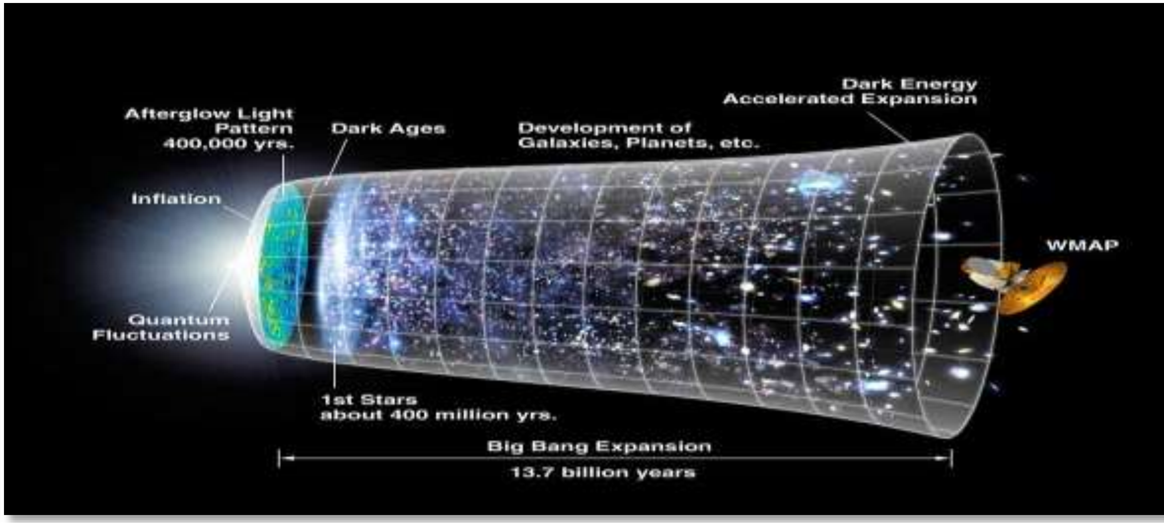
- **Max Planck(1858-1947)**: He was a German theoretical Physicist, who organized Quantum Theory, which own him the Nobel Prize in Physics by his discovery of energy quanta in 1918.
- **Planck Time**: Planck Time is the smallest time that our Physics works. On any length scale smaller than this, the rules of space-time break down. The Big Bang almost 14 billion year matter created in steps starting after the Planck time 10^{-43} Sec, Temp: 10^{32}C. No space, No Time and No Matter and all the forces were unified. This is the beginning of the Universe, came to exists.
- **His Dignity**: He is known as the father of Quantum Theory. The theory revolutionized the human understanding of Atomic and Sun atomic world. Einstein's Relativity theory and Quantum Mechanics are the two greatest pillars of 20th Century Physics. Two pillars so counter intuitive to common sense.

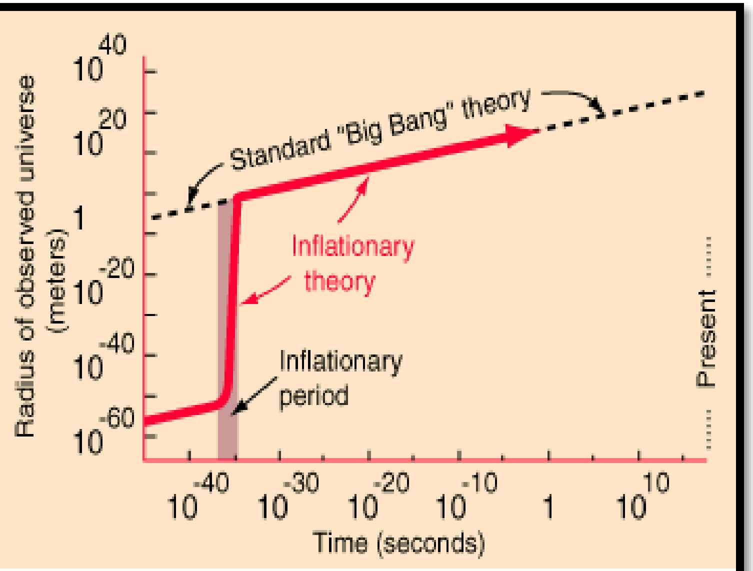
Occurrence of Big Bang(At Time=0 seconds to10^{-43} seconds): The Big Bang was an explosion that supposedly occurred 13.7 billion years ago. At one time, the entire universe was confined to a dense, Hot, Super massive ball of hydrogen. Then a violent exposition triggered the rapid expansion of that Massive ball of Hydrogen. The universe expanded very quickly. Something causes infinitely dense point to expand(into Nothing). Density of universe is so high that time and Space are curled up and the laws of Physics that we know today do not apply. All four forces in neutral were unified. This is time is called the Plank Time.

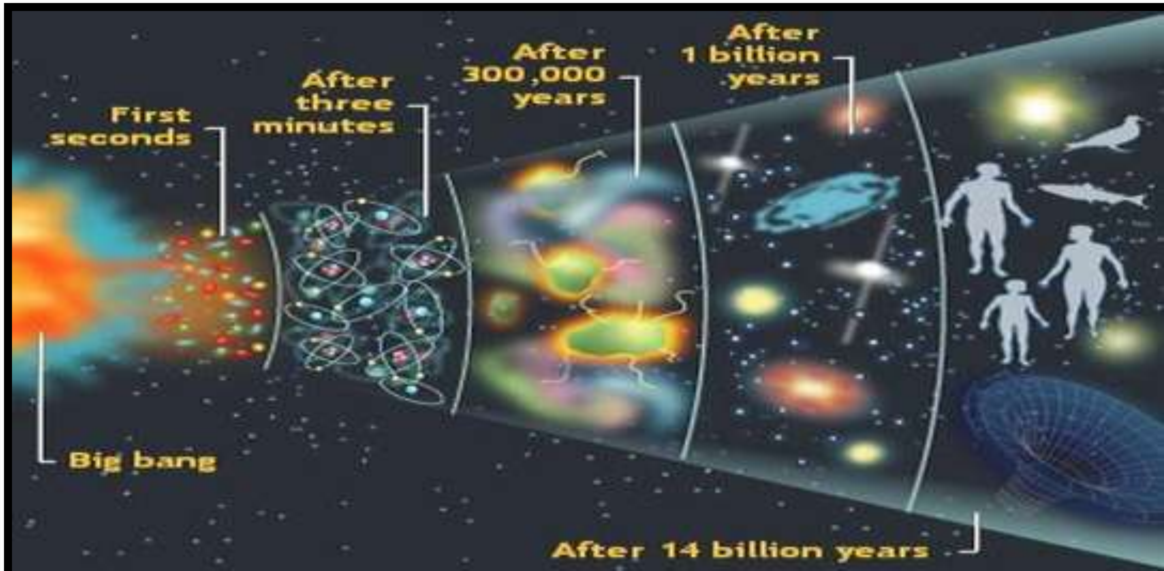


Inflation of Universe(At Time =10^{-35} Sec to T = 10^{-32} Sec): According to Russian Scientist **Allan Guth(1980)** the Universe was created in an unstable energy state which forced a Rapid Expansion of Universe at its early stage which causes Inflation. Inflation caused ripples and eddies which allowed clumps of matter to form stars and planets, and it makes the universe flat, homogeneous and isotropic. The universe cooled to 10^{27}K. The universe expanded by a factor of 10^{50} in 10^{-33} seconds. The universe expanded by a factor of 10^{50}, from a smaller than an atom to bigger than a galaxy.

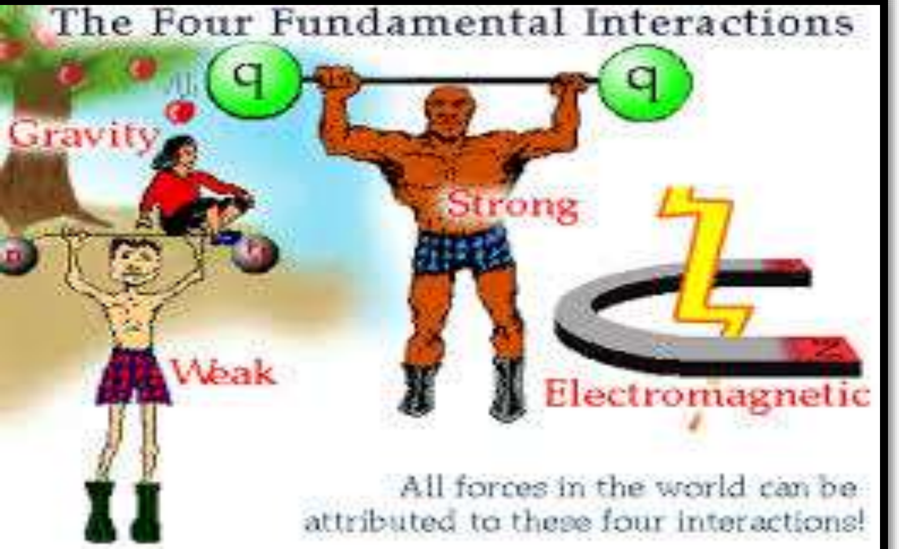


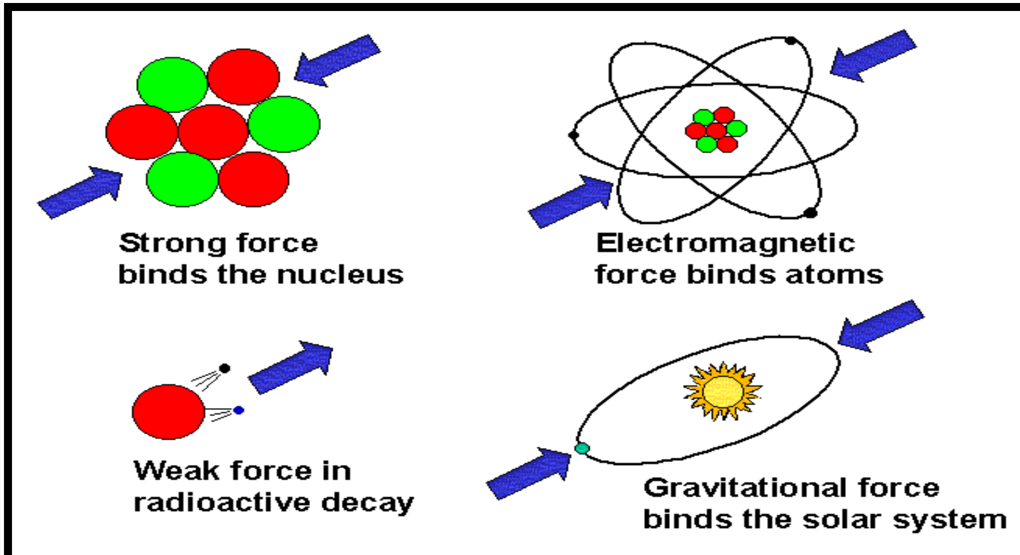


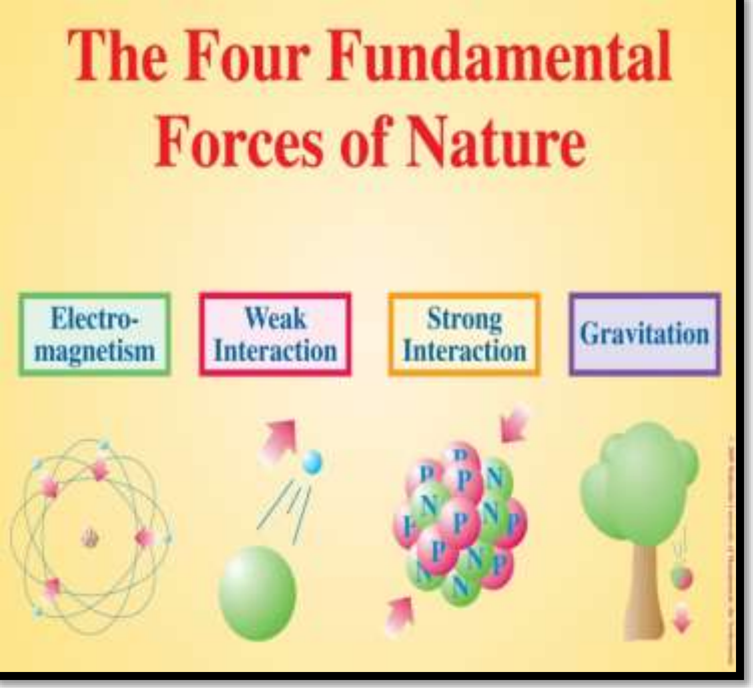


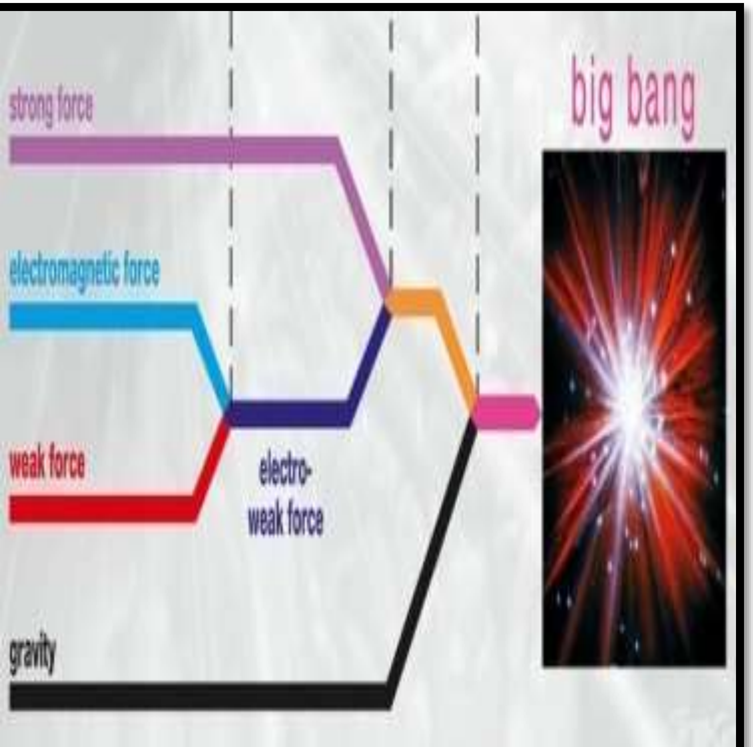


At Time=10^{-32} to T=10^{-6}Sec: After the Planck time, the temperature had decreased 10^{32} K at 10^{-38} Sec, the universe increases in size more than a Trillion, trillion, trillion times every fraction of a second. The expansion of the universe and the division of its forces begin. and gravity was the first force to separate. Four Fundamental Forces of Nature began to separate. They are such as Gravity, Electromagnetic, Weak Nuclear and Strong Nuclear.



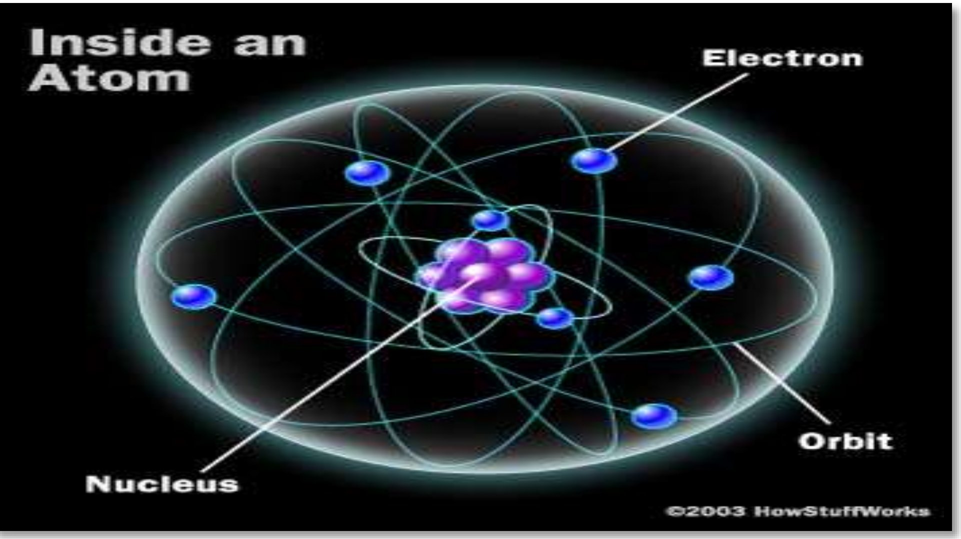


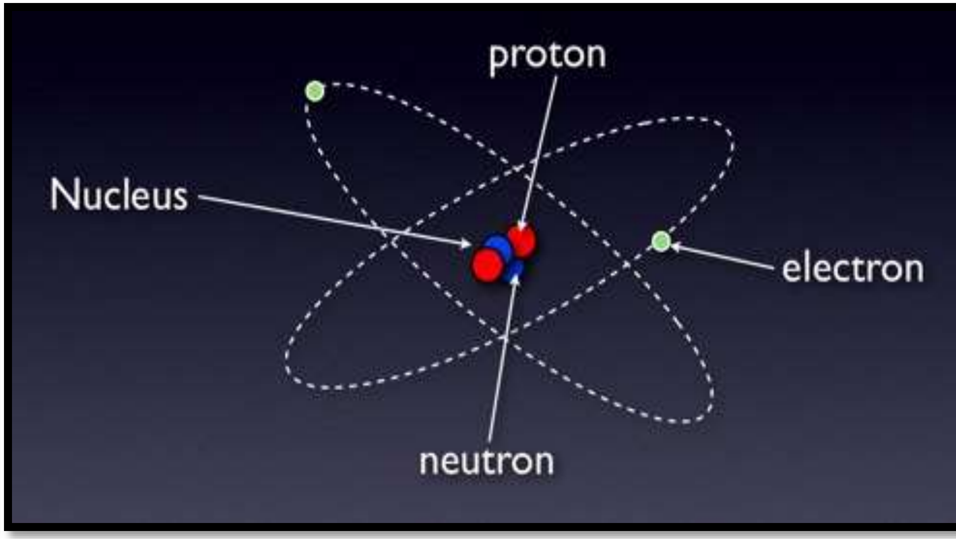


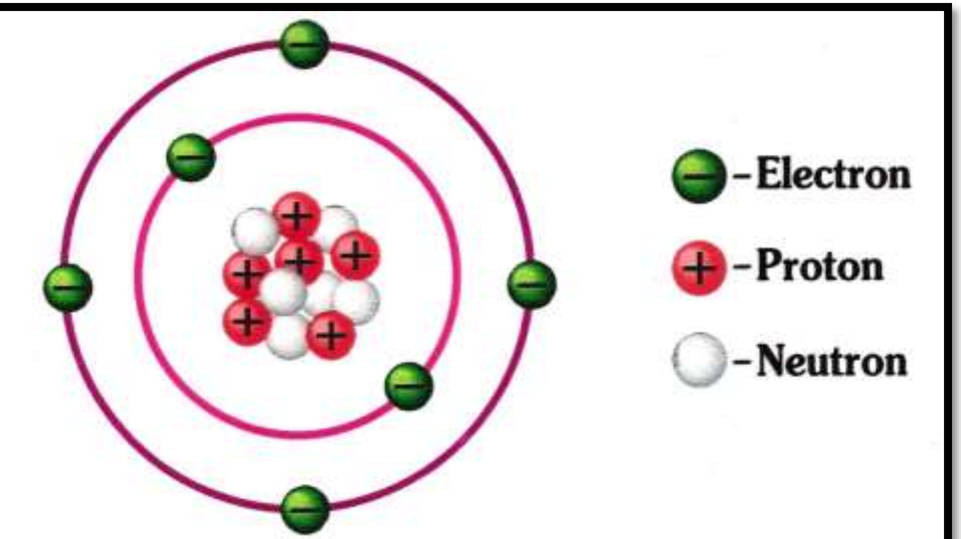


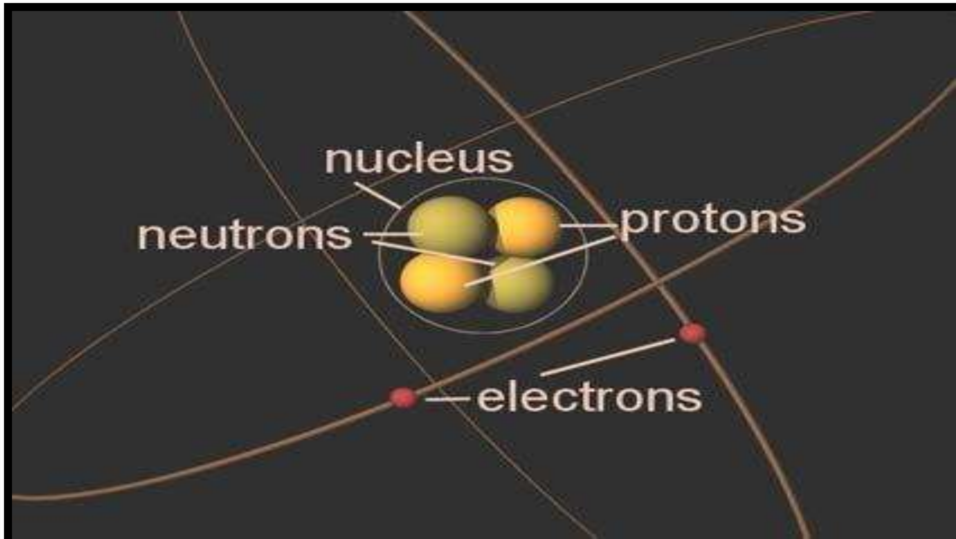
- **Origin of Physics:** All the forces present in the universe come from four fundamental forces. There are only four basic forces of nature.
- **Gravitational Force:** It is a weakest force, but has infinite range of action. All matter is affected by it, and it is an attractive force. the attractive force between all matter in the universe is much larger than two individual atoms.
- **Electro-Magnetic Force: It** is Stronger than gravitational forces. It has infinite range of action and keeps atoms and molecules together. It is responsible for chemical, mechanical and electrical properties of matter. It is motions of electrically charged particles (Eg: Electrons, Protons, Atoms, Molecules)
- **Weaker Nuclear Force:** Weaker than EM forces, but stronger than G forces. Its range of action does not extend beyond the Nucleus. It is responsible for B-decay and fusion reactions in stars. It binds Protons & Neutrons within atom's nucleus. It causes radioactive decay.
- **Stronger Nuclear Force:** Strongest force, but very short range(only between neighboring nucleons). It keeps the nucleons together. It is decay of unstable (radioactive) elements.

At Time=10^{-6} to 1 Sec: At the end of inflation, the universe was reheated to 10^{27} K, at T=10^{-6} sec. Once the temperature has decreased by the first second, the universe's fundamental particles formed of electrons, photons, neutrons. While the expansion slows down; universe cools and becomes less dense. All matter is made up of atoms. Made up of Proton(+), Neutrons, and Electrons(-). An atom is made of a nucleus which has protons and neutrons and an outer layer made up of paired electrons. Protons and Neutrons combine to form the Nucleus of an atom.

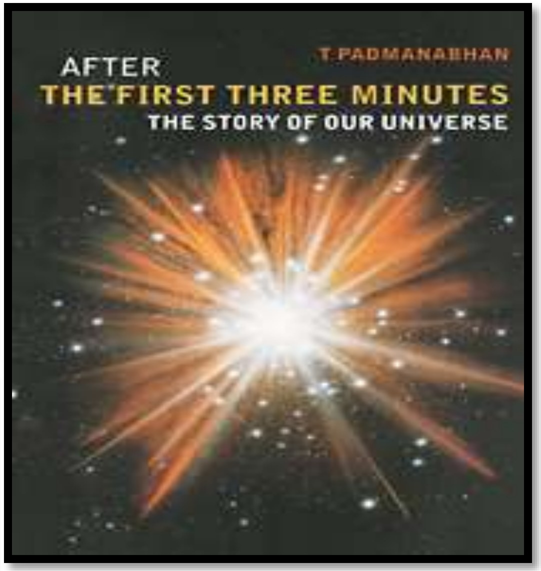


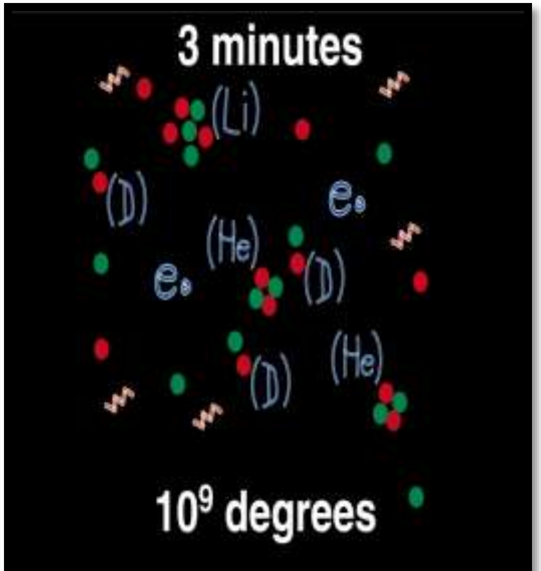


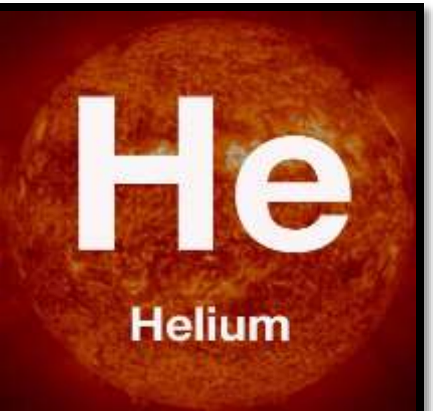


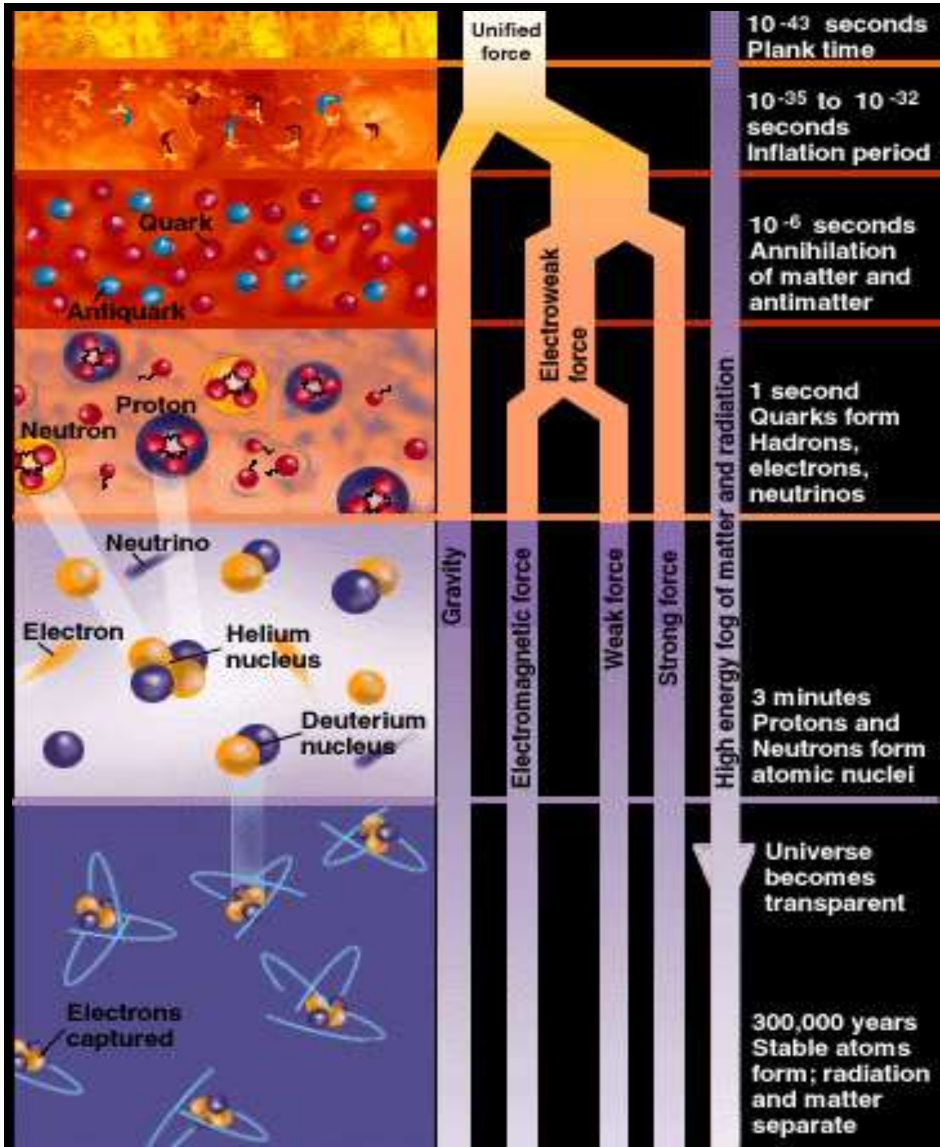


<u>At Time = 1 sec to 3 minutes:</u> Within the first three minutes after big bang, the universe would appear opaque during all this time because photons and matter would be interacting due to high temperatures(10^9 ^{0}C), density is that of air Protons and Neutrons had begun to react to form deuterium, an isotope of hydrogen, which then collected another neutron to form tritium. The first (atom) element formed of 95% of Hydrogen, 5% of Helium and trace amount of Lithium.

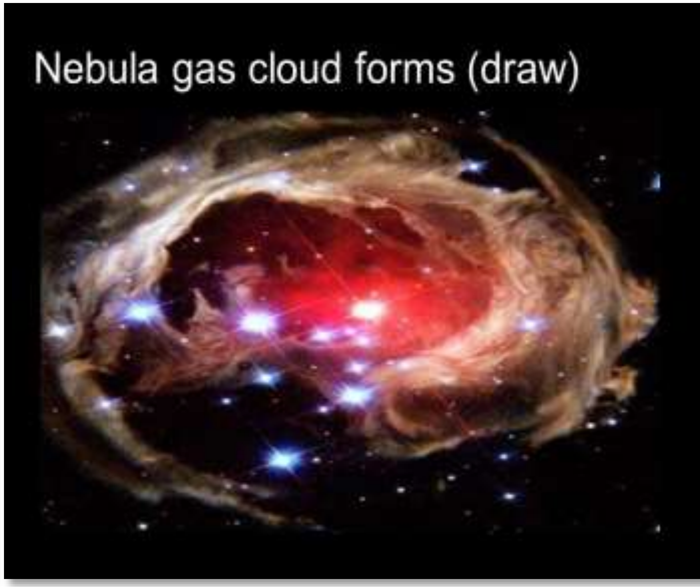


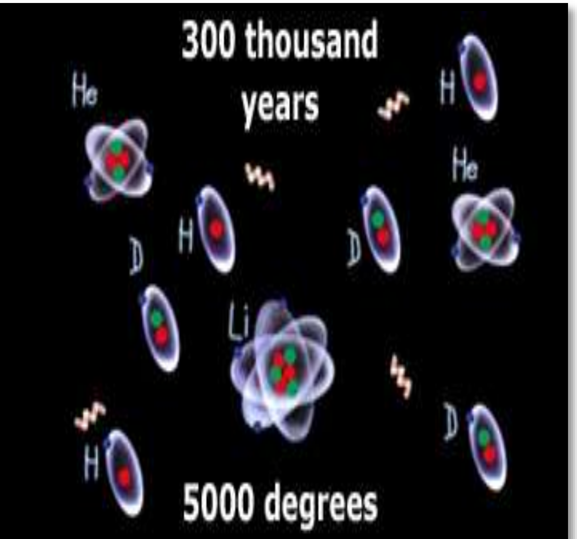


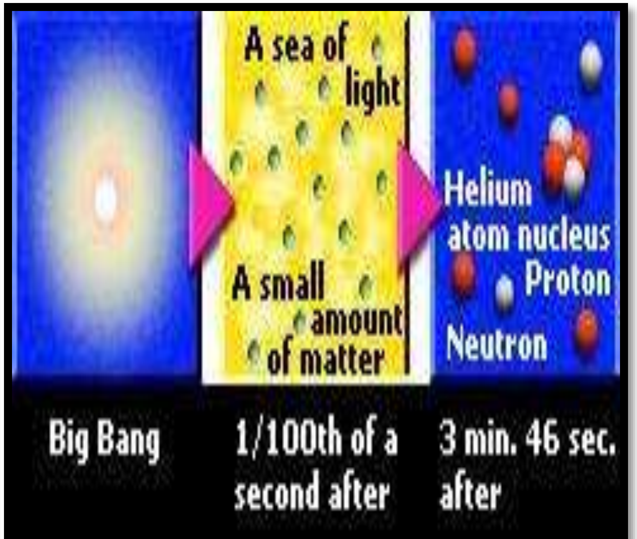




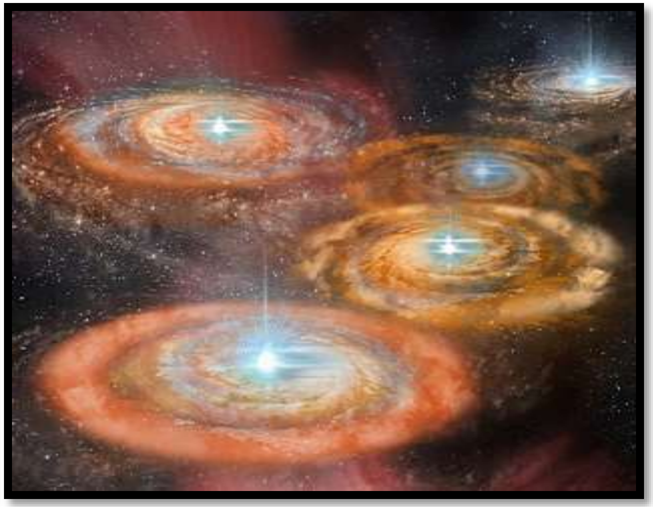
At Time= 3 minutes to 380,000 yrs: The Big bang explosion released vast amounts of energy at 2700C. The energy slowed, cooled, and matter formed. Photons escapes from the Dense web of particles and could now pass freely through the universe. Gravitation gives shape to stars. As clouds of Hydrogen and helium condensed into large areas of gas and dust known as Nebula. It is the beginning of all new stars.



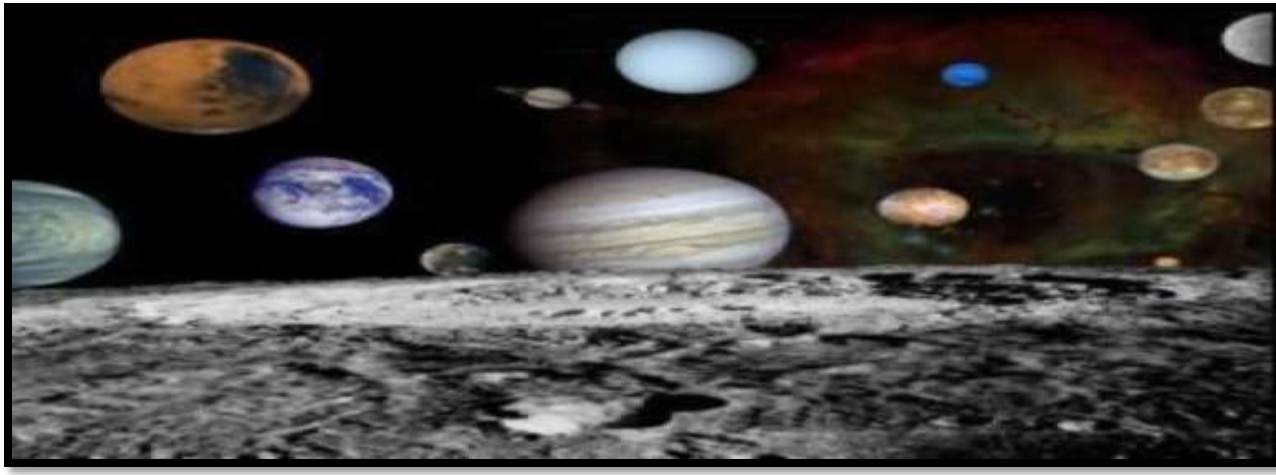


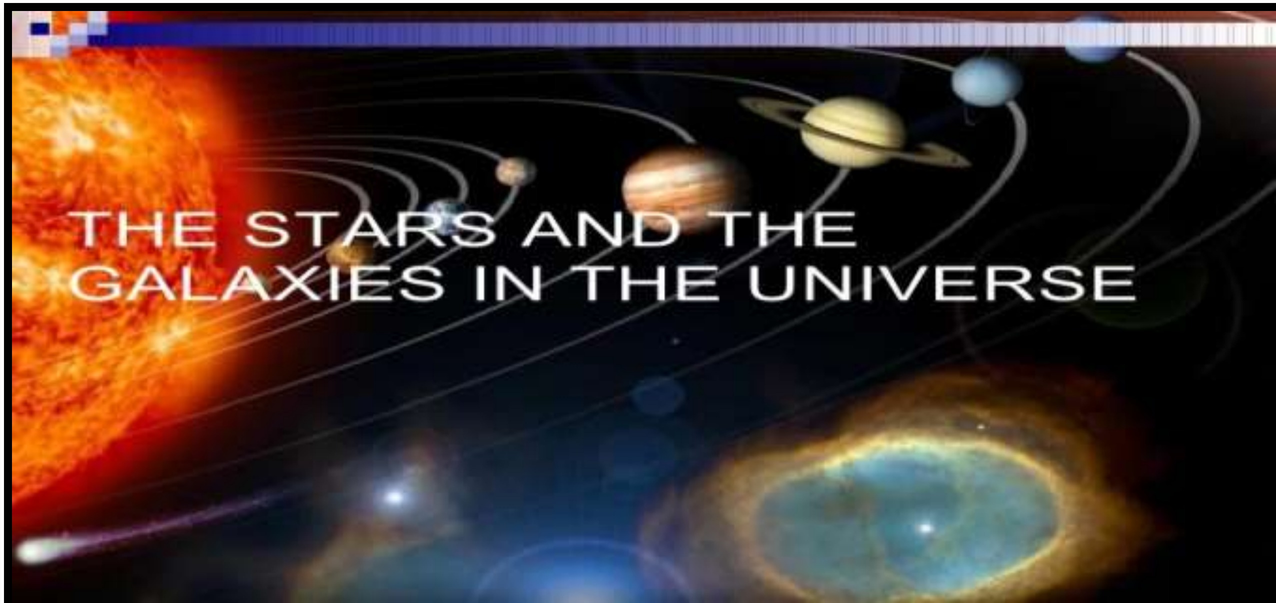


<u>Birth of a Star(300 Million Years after the Big Bang)</u>: A star begins life as a cloud of dust and gas(mainly Hydrogen) known as Nebula. A Pro-Star is formed when Gravity causes the dust and gas of a Nebula to Clump together. While the Nebula was travelling toward the centre, it starts to shrink, because Gravity pull matter together and the first star was formed. Stars are formed by the collapse of large clouds of mostly Hydrogen, Helium gases and Dusts that leads into Supernova towards its end of life. Supernova is ultimately responsible for various elements we see in Earth and Ultimately life!

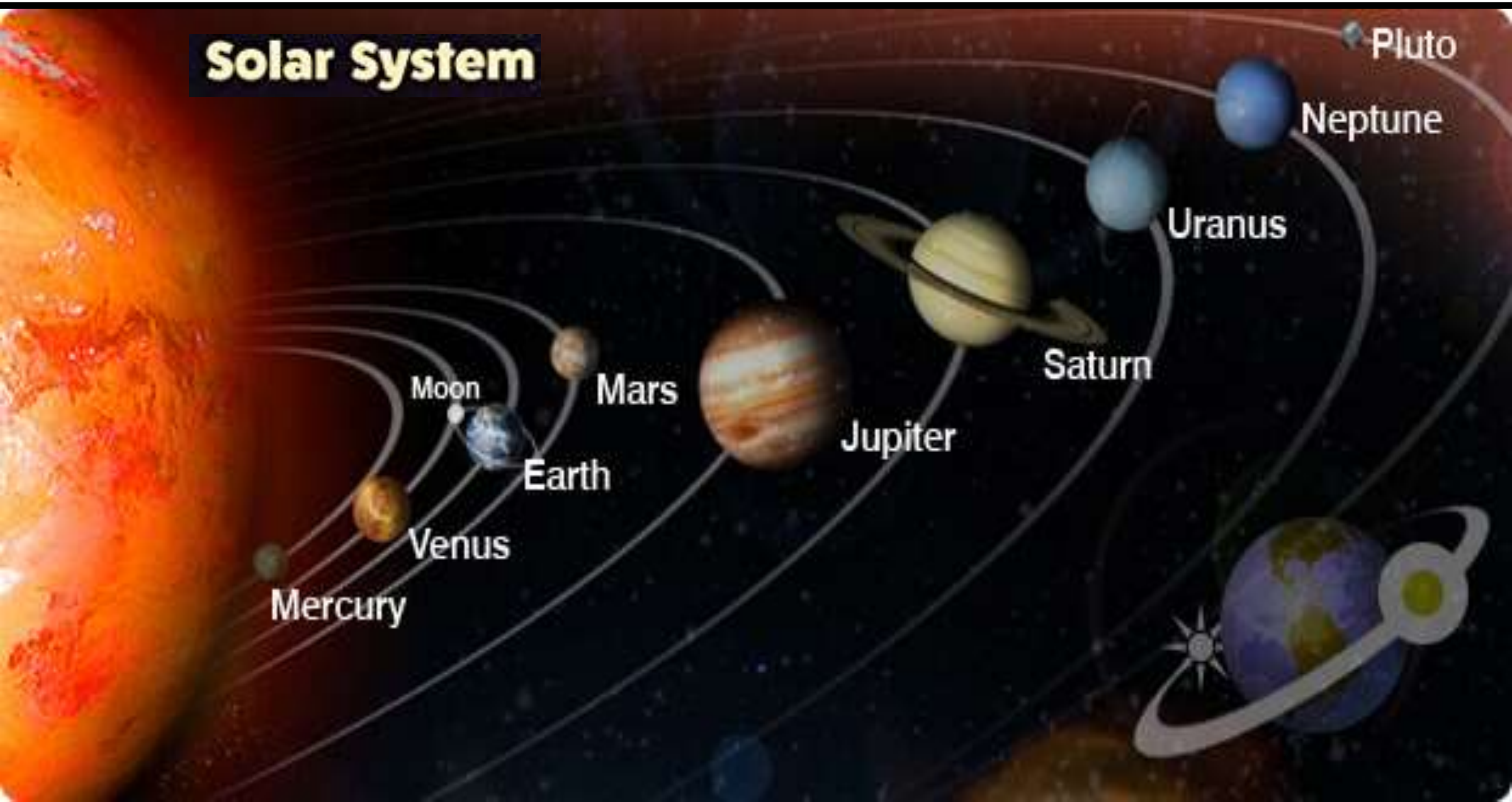


Birth of Galaxies(500 Million years after the Big Bang): A Galaxies acquire their definitive shape. Gravitation gives shape to islands of millions and millions of stars from masses of Gases. The stars explode as supernovas and disperse heavier elements, such as carbon. galaxy is a group of stars, planets, gas, and dust that is held together by gravity. A large group of stars outside of our own Milky Way, made of billions of trillions of stars. Also may have gas and dust. Spiral, or elliptical or irregular shaped. We live in the milky way galaxy. There may be more than 100 billion galaxies.

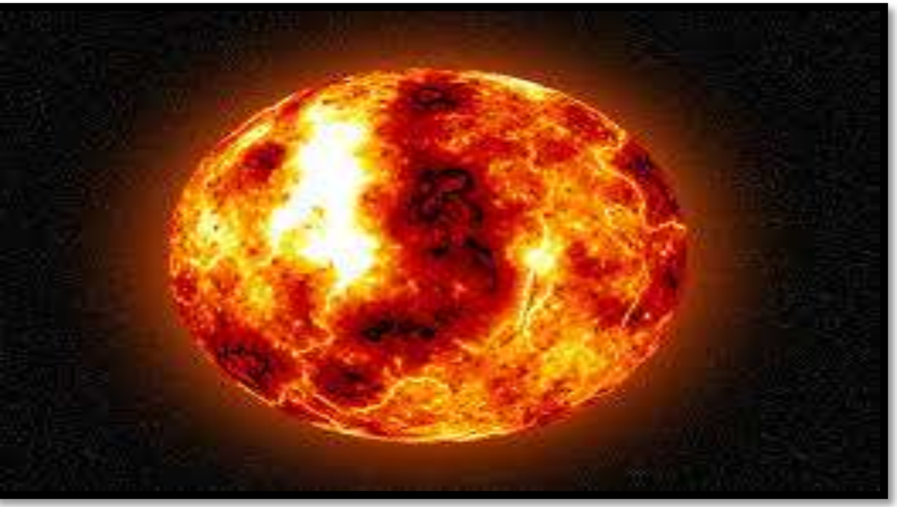


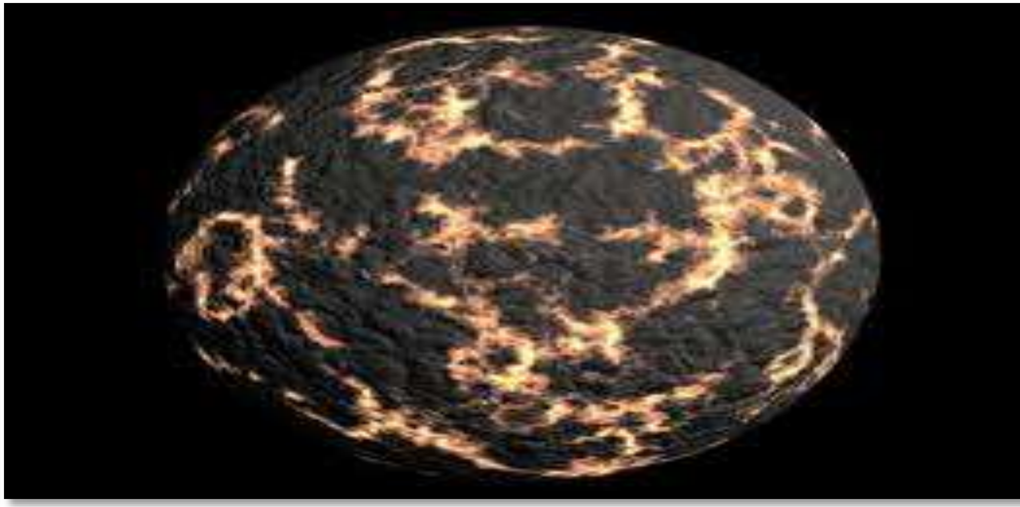


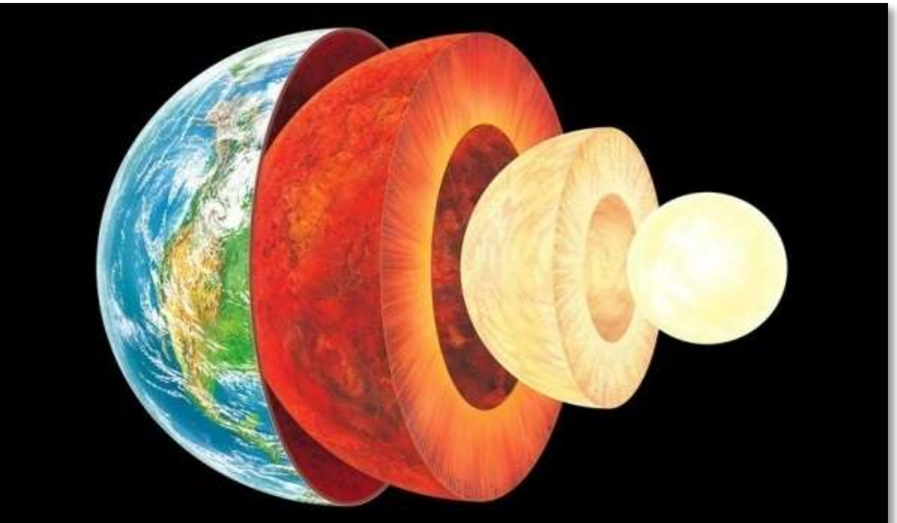
Birth of Our Solar System(9 Billion Years after the Big Bang): A mass of gas and dust of supernova collapsed until it gave rise to the Solar System. The Solar System were nothing but a cloud of cold dust particles swirling through empty space. The Solar System includes the Sun and all the objects that orbit around it due to its gravity. This includes things such as Planets, Asteroids, Meteoroids and Moons. There are the planets in the Solar System - Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Our Galaxy contains at least 100 billions stars, of which the sun is one.

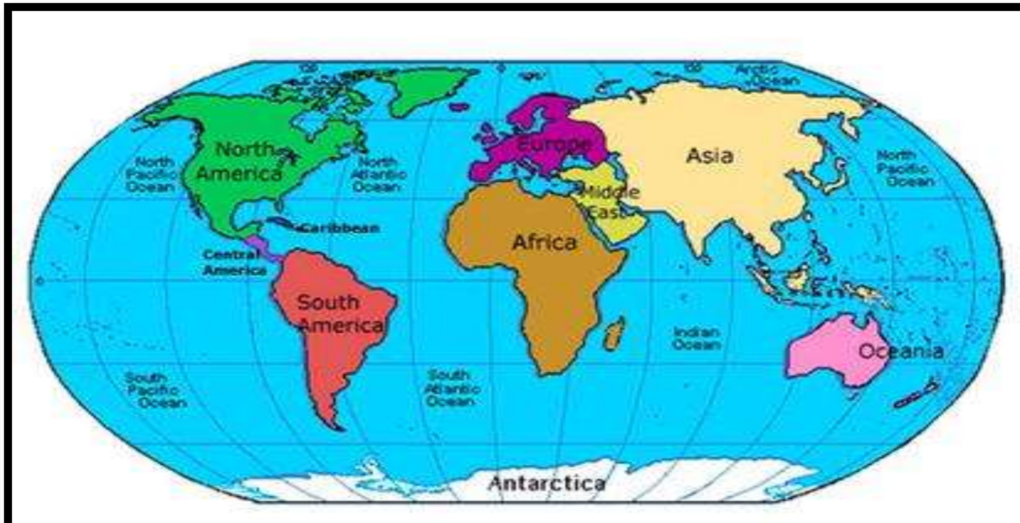


<u>Birth of Earth(1 Billion yeas after the Big Bang)</u>: The earth formed of material that remained after the formation of the solar system. The Earth was a hot glowing ball of white hot gas. Heavy materials were on the Earth and a liquid material went to the centre. Just 3.8 Billion years ago, the earth's surface cooled enough for water to exist in liquid form. Our Earth is in perfect condition that it is not very close to the Sun making it too hot… And neither is it farther away making it too cold. It supports life as it can maintain water on it's surface. Then the ocean were born, and the Earth was ready for life to begin.

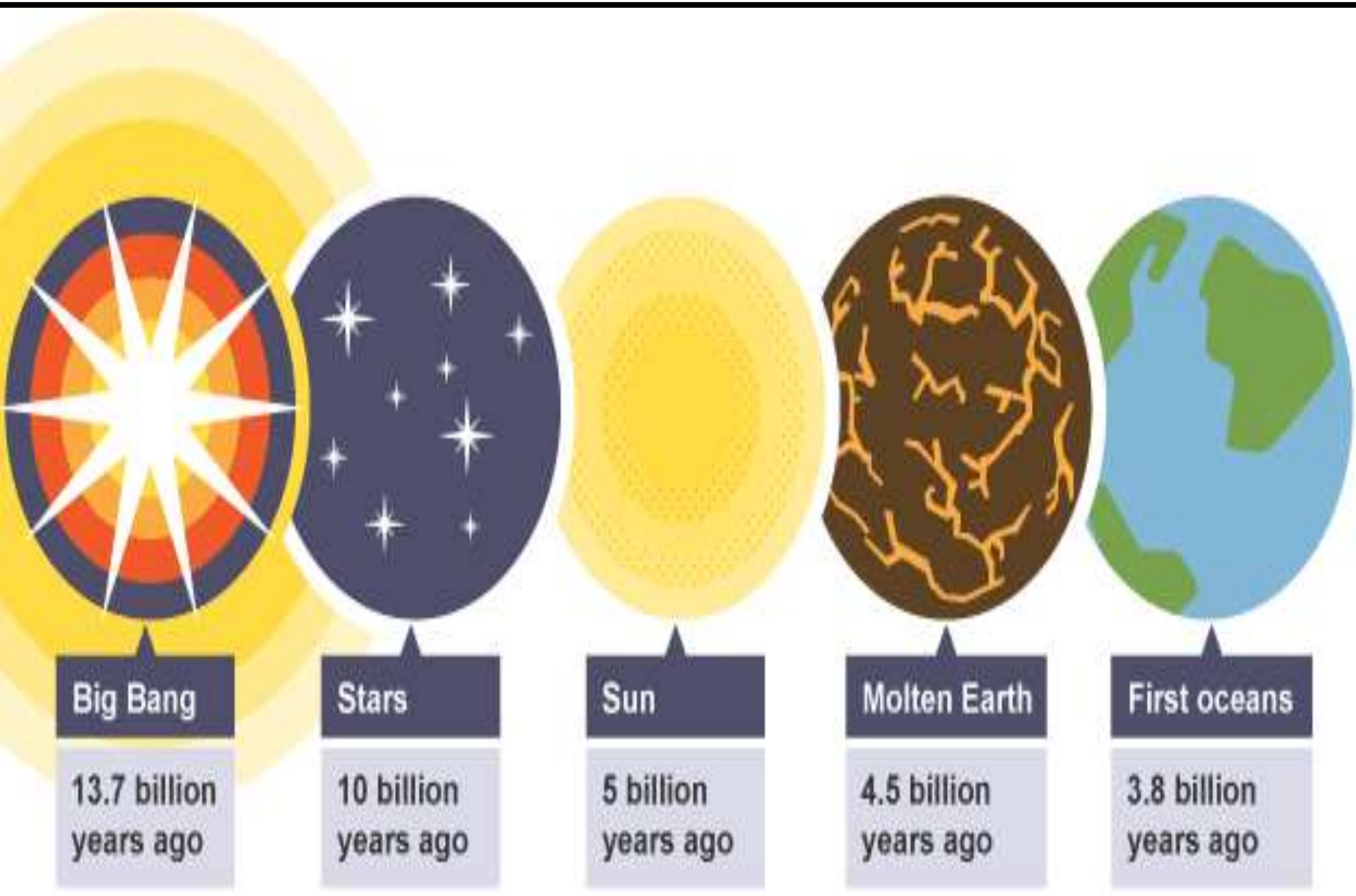




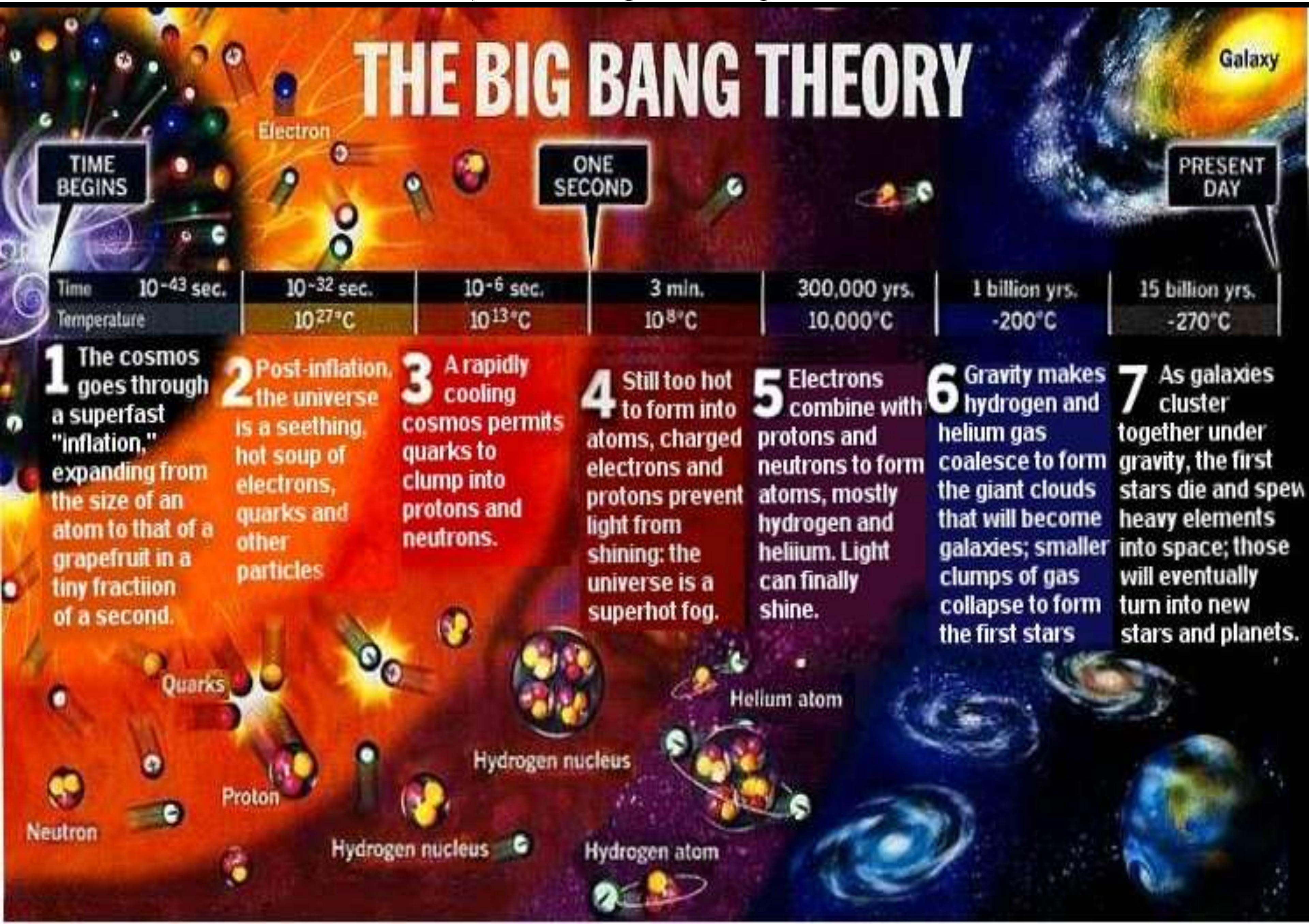




Summary: After the Big Bang , till today…

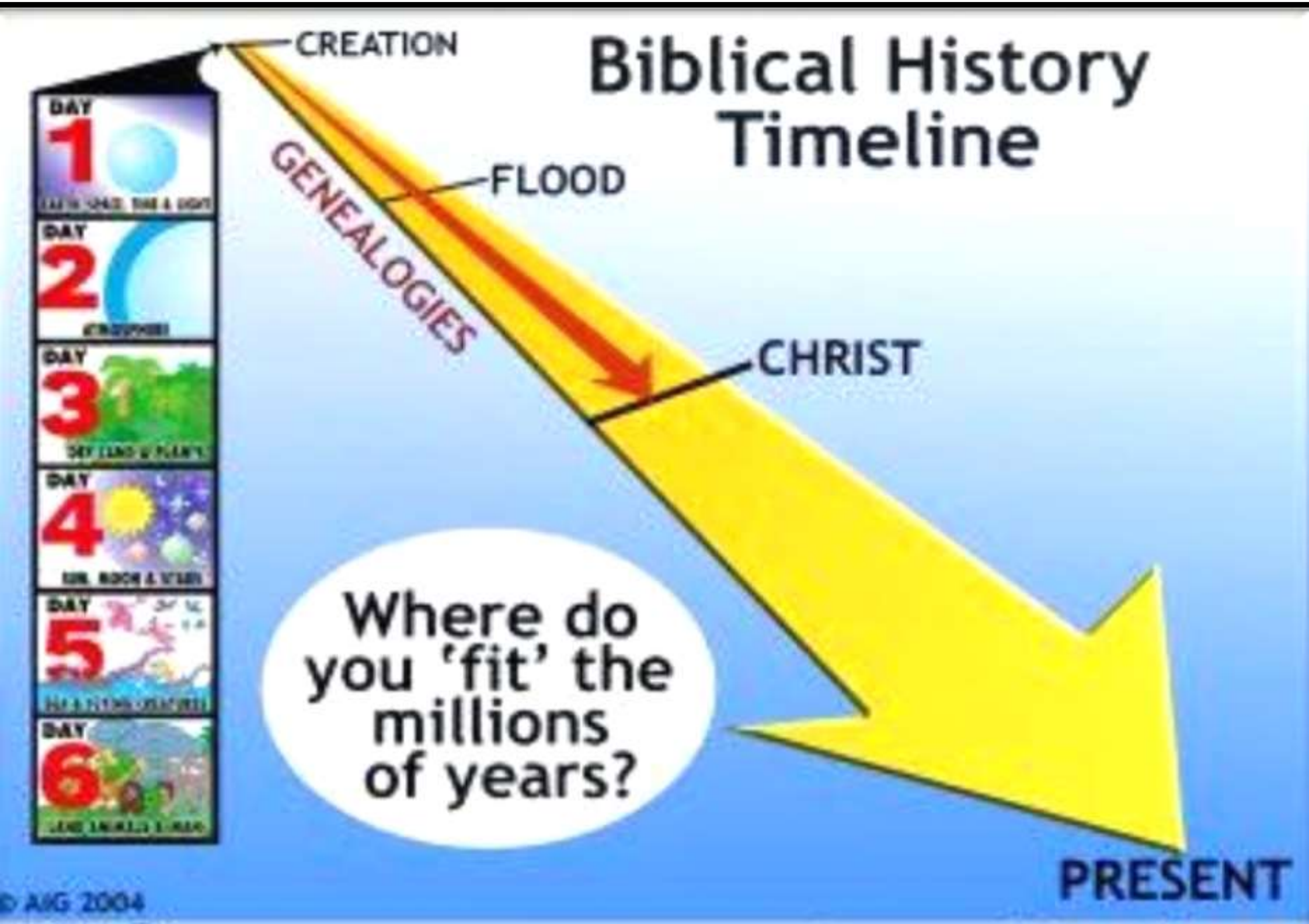


Summary of Big Bang Timeline:-

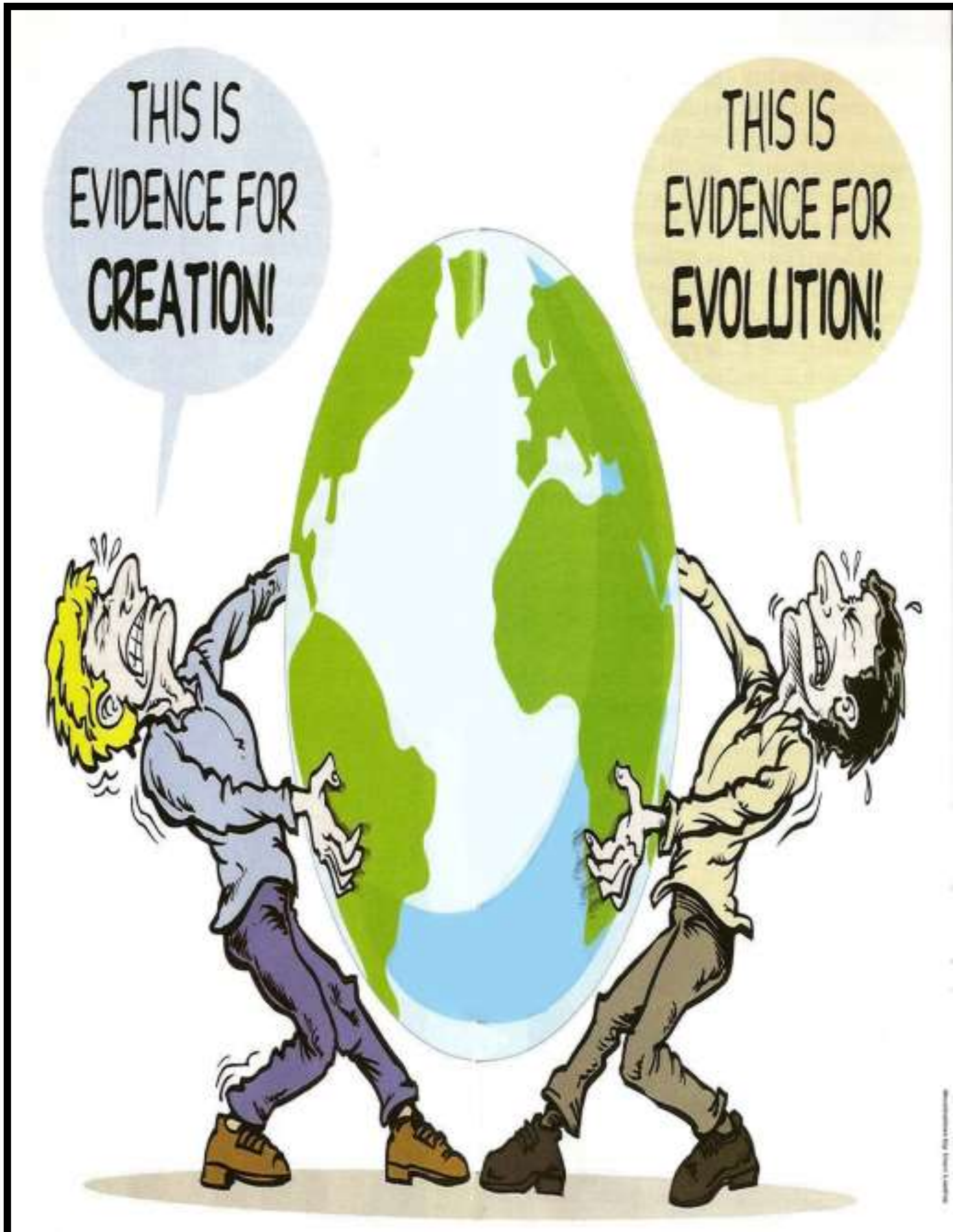


Big Bang Creation Vs Biblical Creation

The Big Question to Christianity?



Christianity(Creation) Vs Science(Evolution)

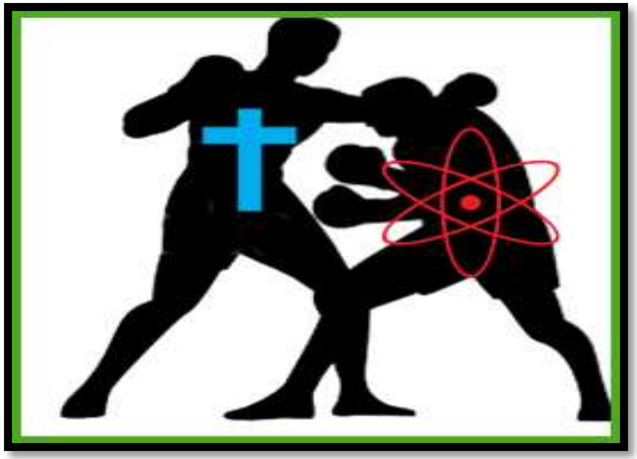


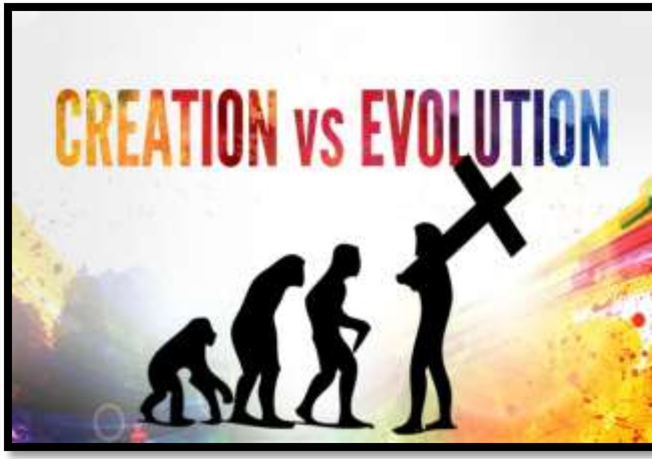
Contradictions between the order of Creation in the Bible and Evolution/Day-ages

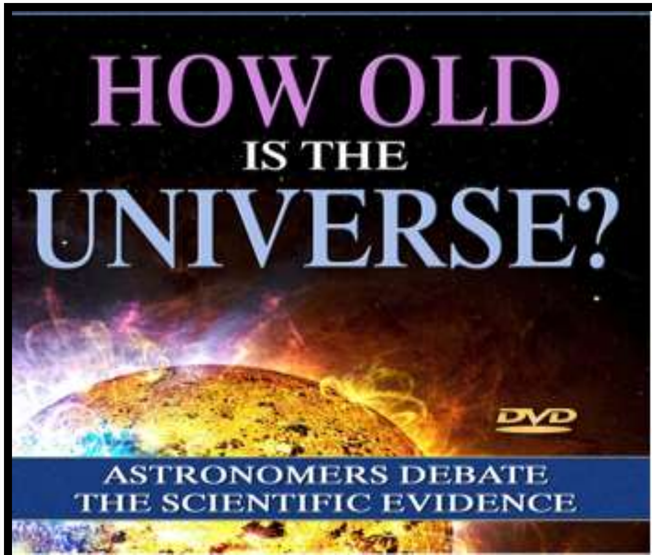
BIBLICAL ACCOUNT OF CREATION	EVOLUTIONARY/LONG-AGE SPECULATION
Earth before the sun and stars	Stars and sun before earth
Earth covered in water initially	Earth a molten blob initially
Oceans first, then dry land	Dry land then the oceans
Life first created on the land	Life started in the oceans
Plants created before the sun	Plants came long after the sun
Land animals created after birds	Land animals existed before birds
Whales before land animals	Land animals before whales

The attack on the Bible by the Evolutionist

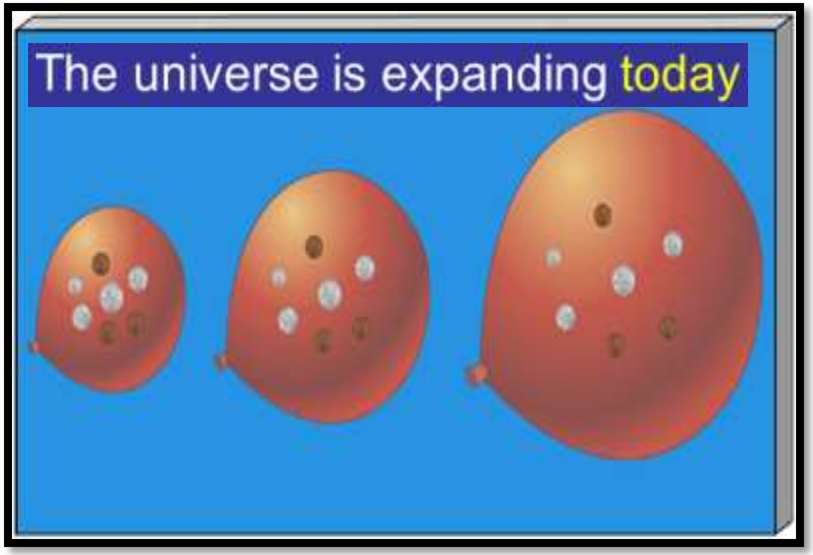
Science Vs Christianity: Genesis says the Universe was created in six days but evidence reveals that the universe created over 13.7 Billion years old. In the past, many interpretations of the Bible were wrong, not because the scriptures were wrong, but because man tried to interpret the scriptures in the context of the accepted 'scientific" ideas of the day. Science tells us How things work but Religion tells us Why things are here and How we should live ethically and morally. We should judge the words of man against the word of God, and not the other way around. Science and belief in God go hand-in-hand, because God is the author of Science.

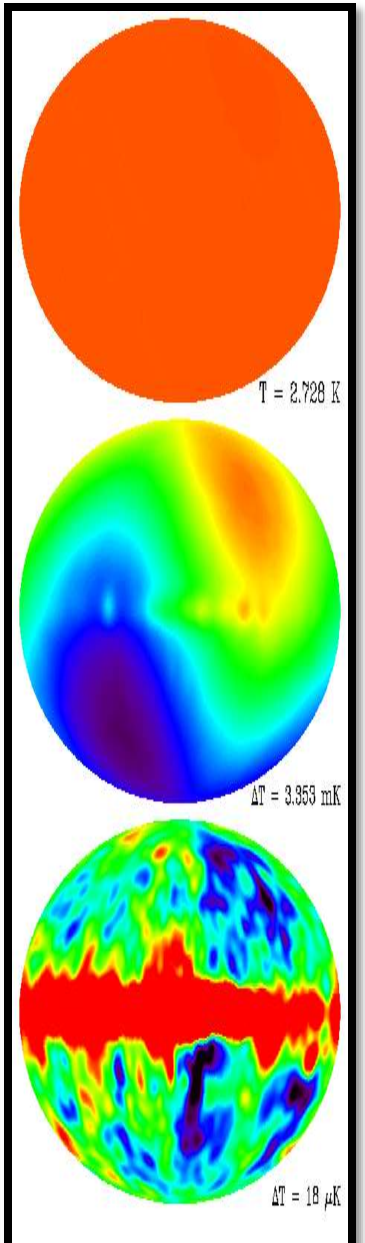


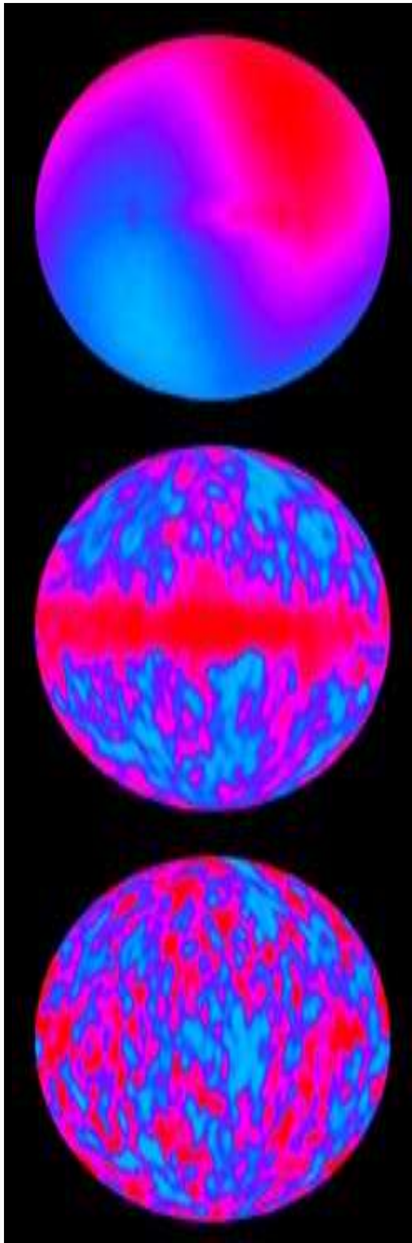


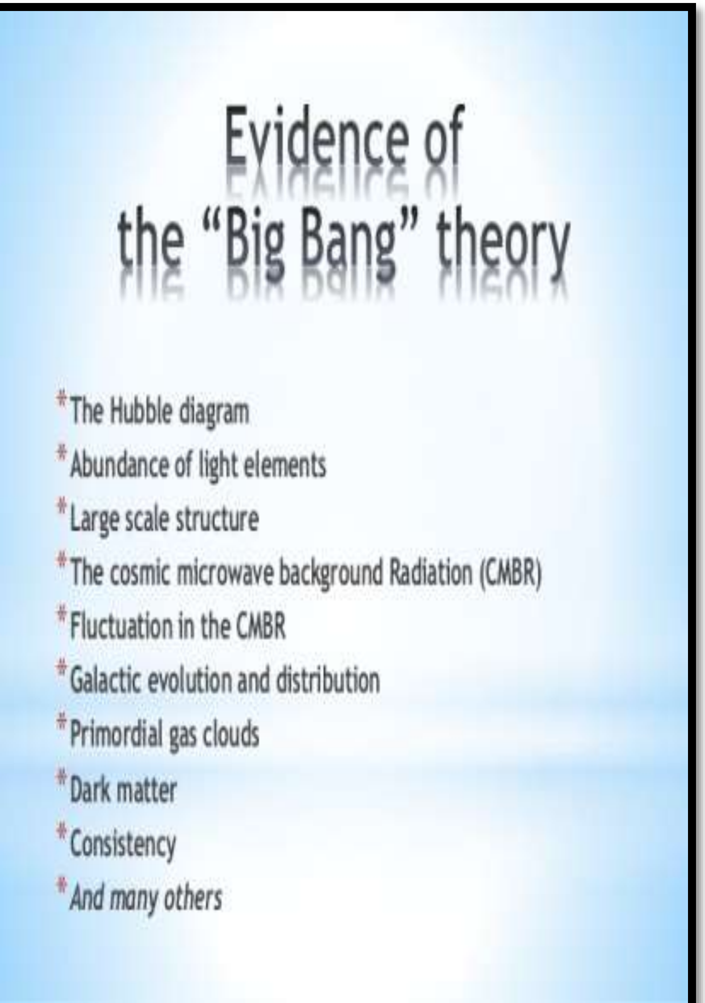


Evidence of the Big Bang Theory: Cosmic Micro-waves Background Radiation(CMBR)







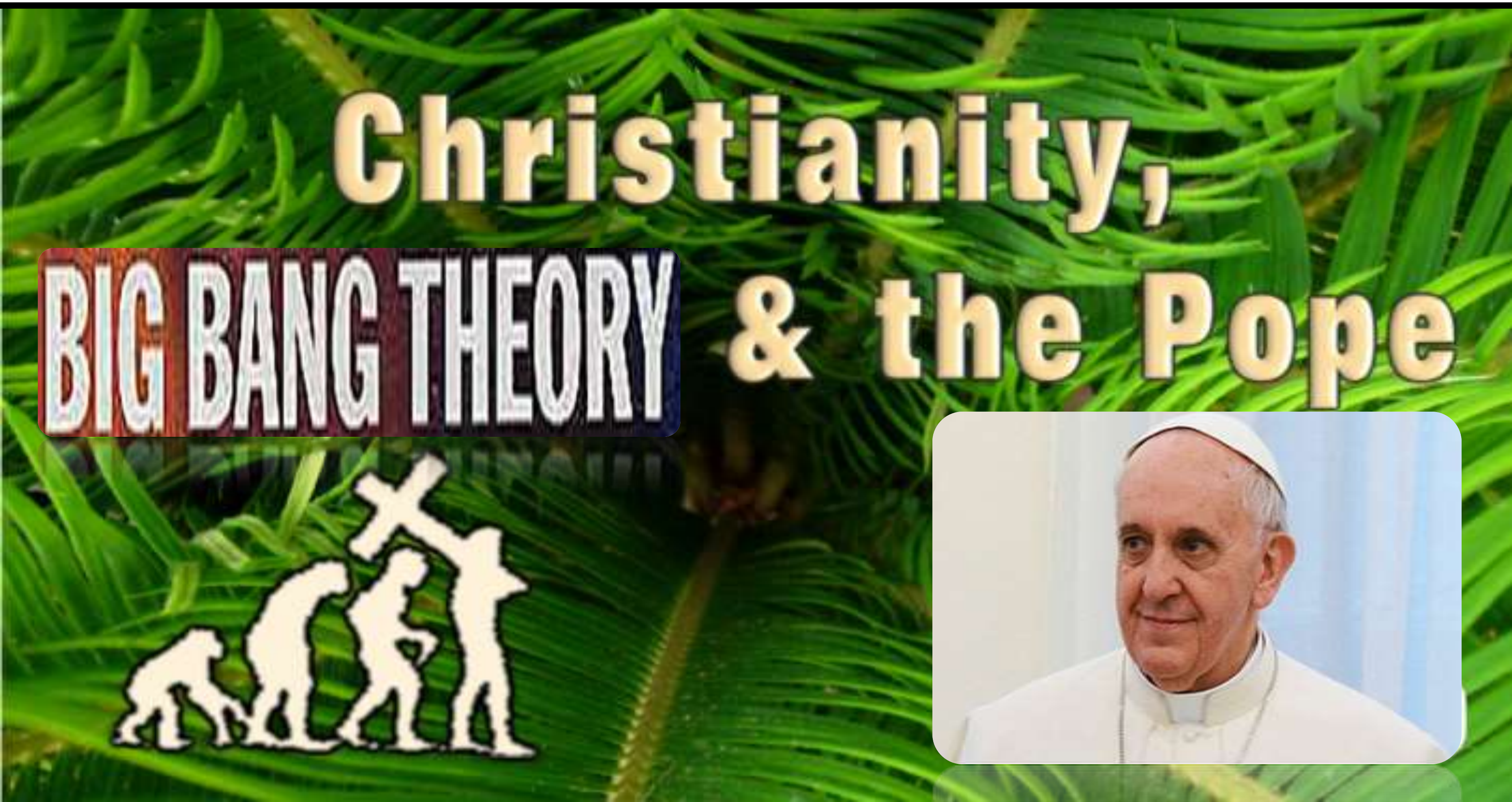


- **Hubble's Law(1929):** Galaxies are moving away from us and the universe has been expanding. It was once smaller, so it must have started expanding sometime by Explosion.
- **Cosmic Microwave Background Radiation by Penzias & Wilson(1965):** Background radiation from the Big Bang is still around now (it's the fuzzy noisy stuff you get on TV sets that don't have digital). Temperature measurements of CMB Radiation are as predicted by the Big bang.
- **The Relative Abundance of Elements:** Everything we need to make the universe seems to have been created with the Big Bang--e.g. the proportion of Hydrogen(93%) and Helium(7%) is exactly what it should be if there was a Big Bang. The Abundance of Light elements found in the observable universe.
- **Red Shift:** Stars and galaxies are moving further away from each other at a known rate of speed – 'Red Shift'--This implies they were once MUCH closer.
- **Nobel Prizes:** In 1978, Nobel Prize was awarded to Arno Allan and Robert Woodrow for their discovery of CMBR. In 2006, Nobel Prize awarded to John C Mather and George Smoot for their Discovery of the Blackbody form and Anisotropy of the CMBR. In 2011, Nobel Prize awarded to Saul Perlmutter, Brain Schmidt and Adam Riess for the Discovery of the Accelerating Expansion of the Universe through observations of Distant Supernova.

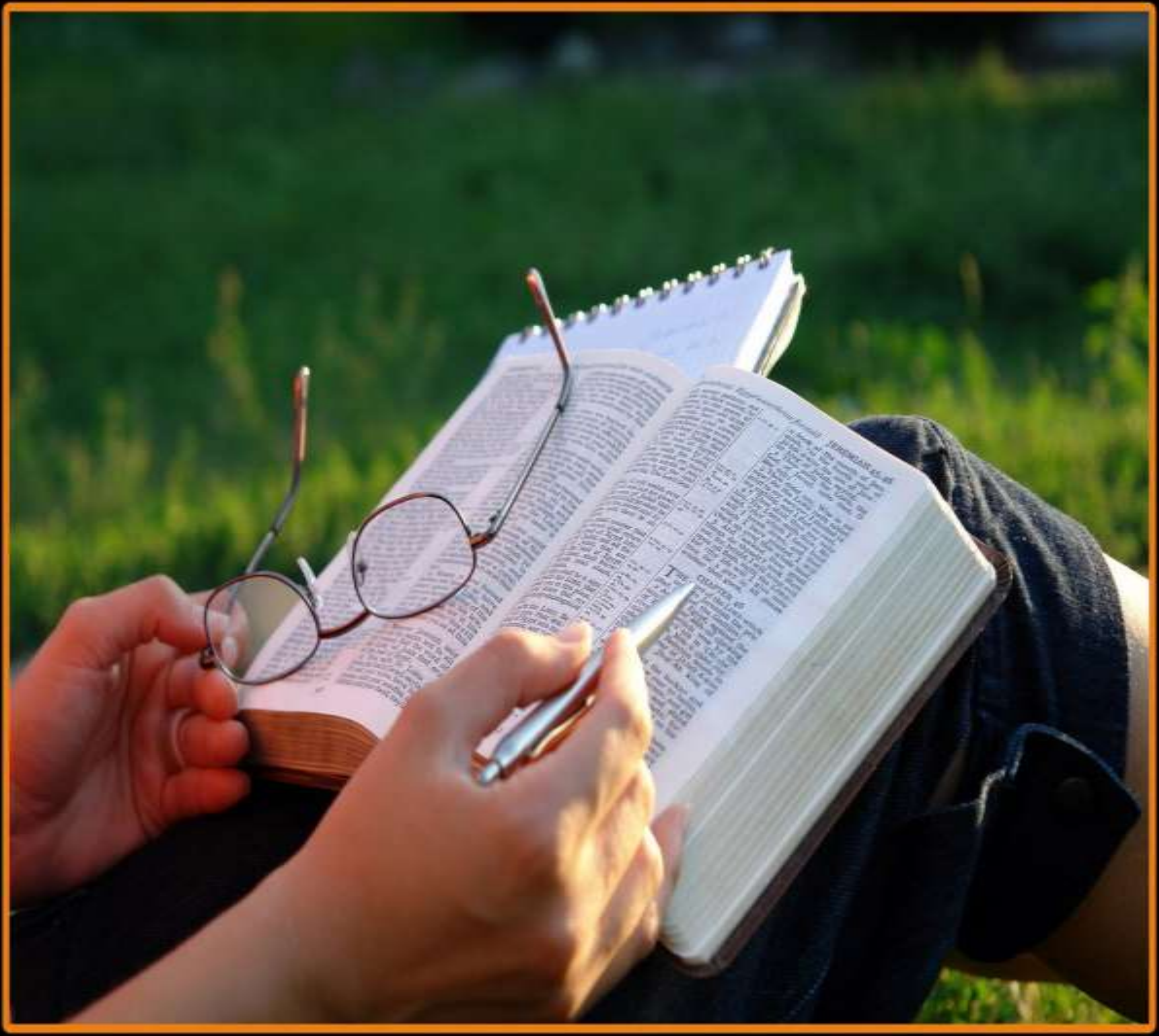
World View about Creation

- **Creationists:** God created cosmos 6000 to 10,000 years ago. By Divine command; He created humans in their present form. There is literal truth in the Bible, but this does not discount Scientific ideas; the Bible mentions "let there be light" and this could refer to the Big Bang. The Big bang and Evolution theories are rejected in favor of the Genesis account of creation.
- **Evolutionists:** The physical universe and life were not created but happened by natural processes. God does not exist and did nothing and there is no God. But only material things exist. All things continues without interruption from an infinite past until the present. The common descent of all life on earth from a single ancestor via undirected mutation and natural selection. Man and Monkey, both have common ancestors. The Cosmos began by Randomness, not design, and evolved towards conscious, self-aware humans.
- **Theistic Evolutionists:** They attempt to reconcile the genesis account of creation to the theory of evolution. The Bible is full of metaphorical language and Genesis is a creation myth used to explain how God made the world; Science gives the accurate explanation, but doesn't discount the role of God in the Big Bang and Evolution. They believe that God created the universe by means of the evolutionary process . God guided Big Bang to ultimate yield conscious, self-aware human life.

Pope Francis about Big Bang Theory(2015): He said that "The Big Bang, which today we hold to be the origin of the world, does not contradict the intervention of the divine creator but, rather, requires it". "When we read about Creation in Genesis, we run the risk of imagining God was a magician, with a magic wand able to do everything. But that is not so". Evolution in nature is not inconsistent with the notion of creation, because evolution requires the creation of Beings that evolve. The idea that natural selection on its own is insufficient to explain the complexity of the world. Evolution was "more than a hypothesis" and "effectively proven fact".



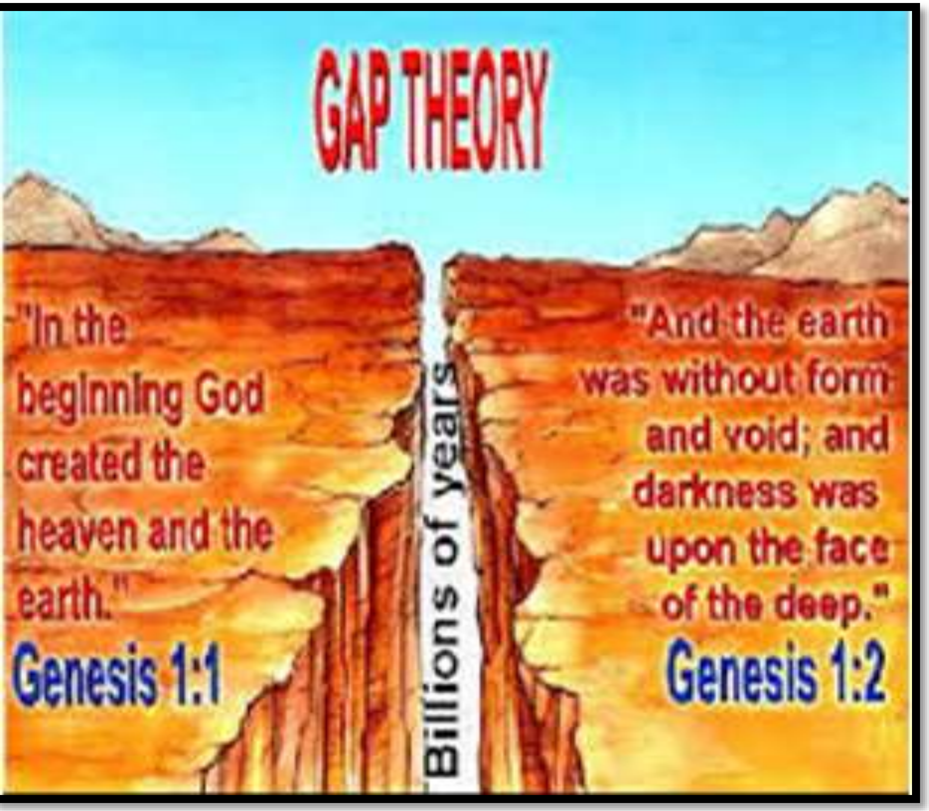
HOW TO UNDERSTAND YOUR BIBLE

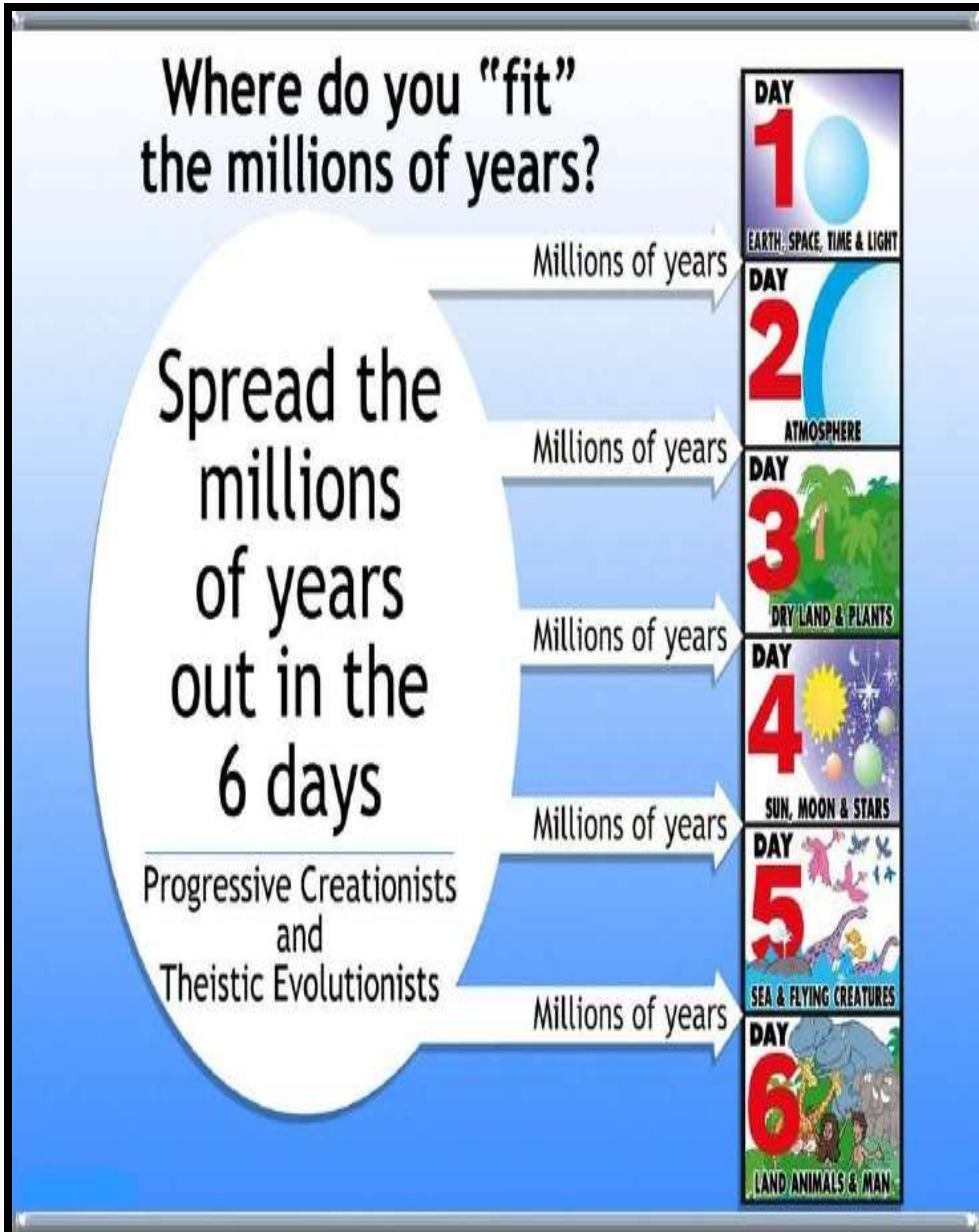


THE ORIGIN OF THE UNIVERSE

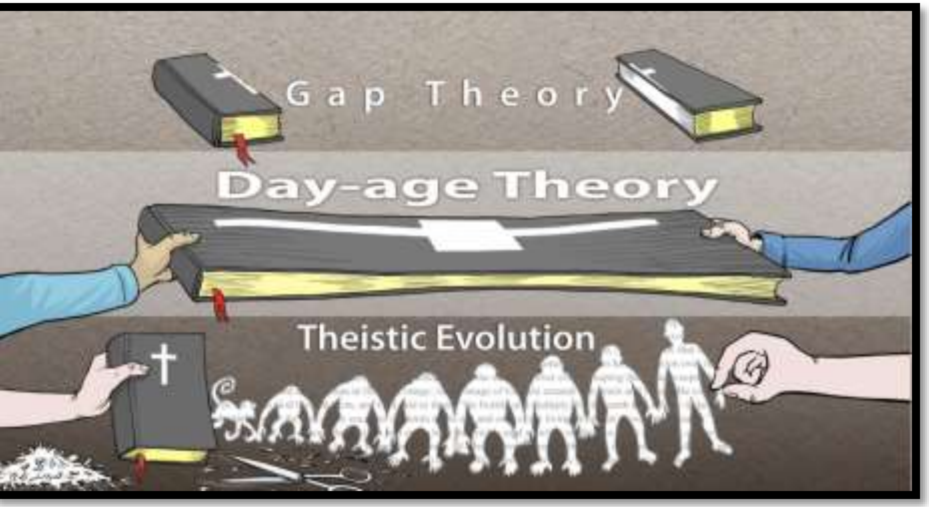
General Principles

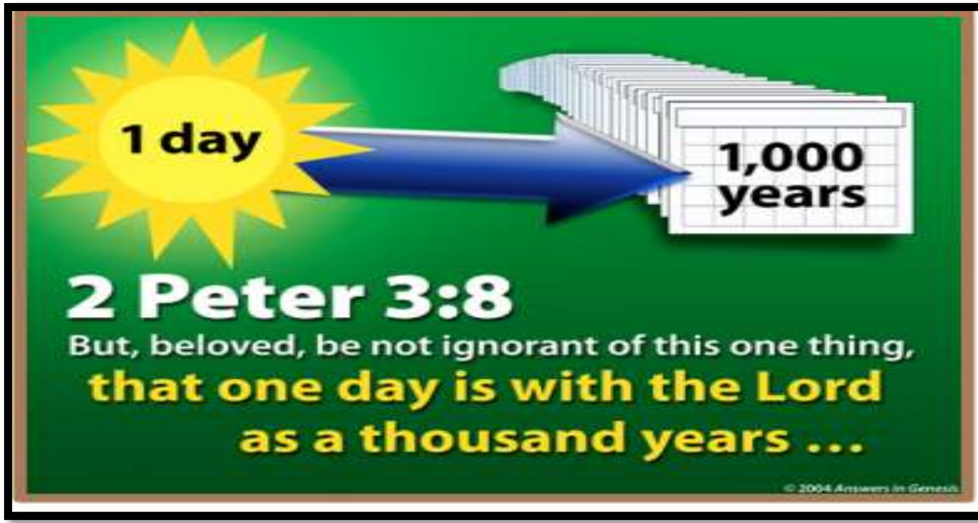
Gap Theory: It is an attempt to reconciliation within the scientific support for Christianity. Gap of time between two distinct creations in the first and the second verses of Genesis Chapter One, explaining many scientific observations, including the age of the earth.



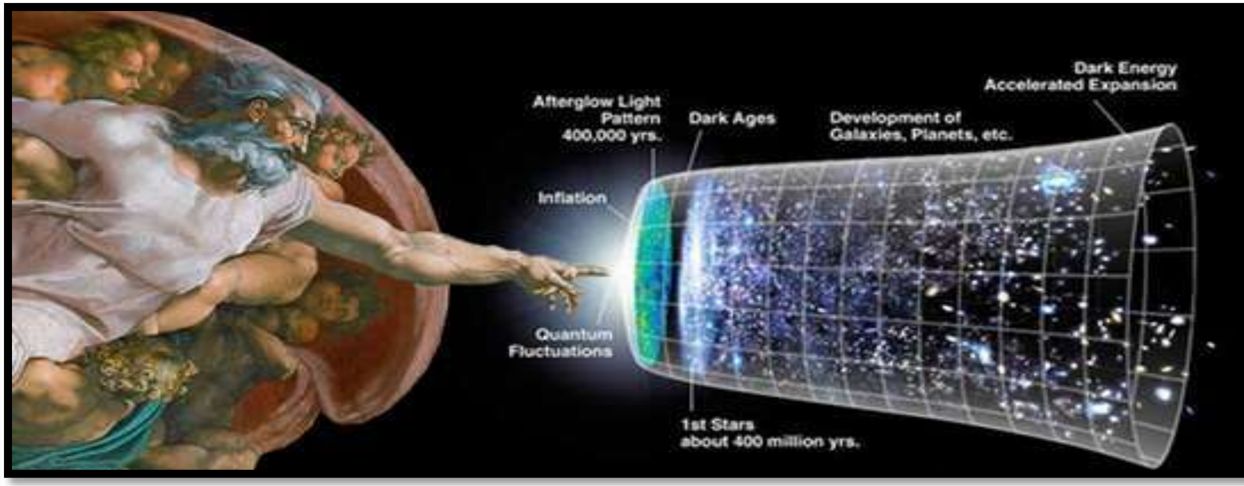


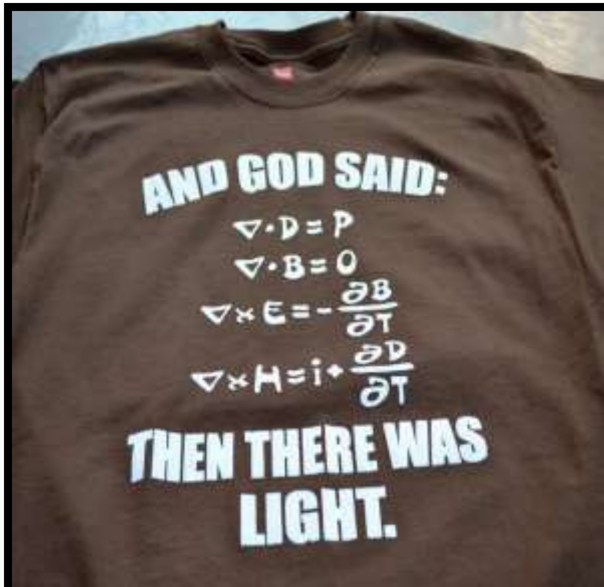
Day-Age Theory of "Time & Day" in Genesis: It attempt to accommodate Genesis to Big Bang for theologically and scientifically. It suggests that each day of creation was actually a longer period of time. The Days of Genesis 1 were not literally 24 hrs days, but rather long periods of time. A **"day"** can mean an **"age/era/period of time"**. The author of Genesis did not write the creation account like historical narrative, rather a sermon that proclaims God as the creator and He created the world for humanity and the creator cares for us. The six days creation is seems as a beautiful metaphorical Poem not (literal) historical account, it gives a meaning and purpose of life.





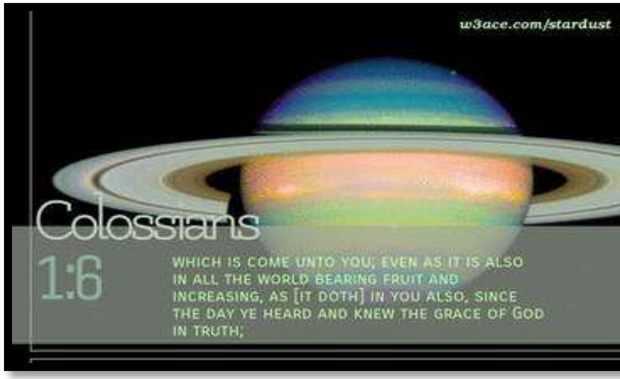
Did God use the Big Bang?: Is the Big Bang compatible with the Bible? "Yes". The Big Bang Theory suggests that universe had a beginning…No pre-existing matter. Something cannot come out of nothing--Something must have caused the Big Bang, that **First Cause was God.** 1. The Universe had a beginning(Gen 1:1: Singular Bang), 2. The Universe is Expanding(Isa 44:24), God Stretched the Heavens(17 references)(Cosmic Expansion), 3. The Universe is governing by constant Physics laws(Jr 33:25, Ps 119:89-91: God governs and sustains the universe).



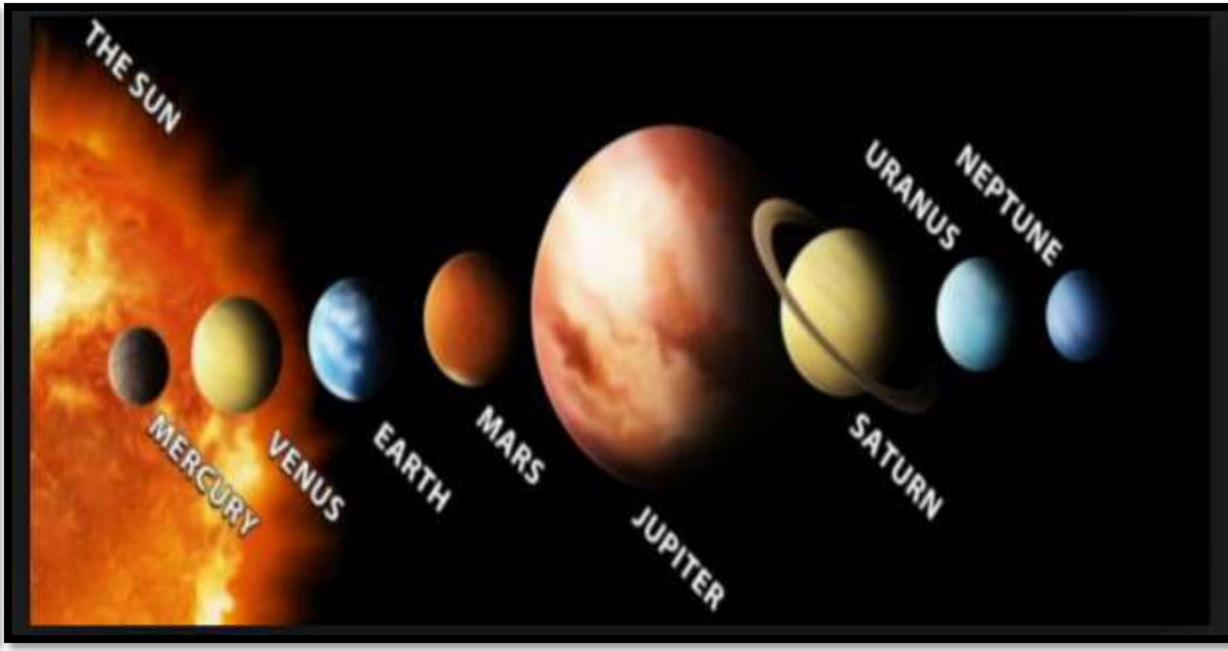


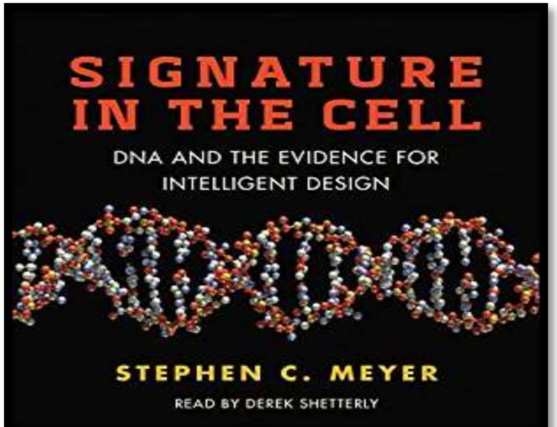
Bible and the Big Bang: The Big Bang might be used to support the doctrine of Creation(**Ex nihilio)**. Since scientists think that nothing existed before the Big Bang. **The Big Bang could support the accuracy of Genesis**: 1(the first thing to be created was **LIGHT**). "In the Beginning"(Time **3 Dimension**: Past, Present, Future), "God created the heavens"(**Space 3 Dimensions**: Length, Width and Height) "and the Earth"(**Matter 3 dimensions**: Solid, Liquid, Gas). All have to come into existence at the same time.

Bible and Astronomy: God created the world(Gen 1:1); the laws of nature were created by God(Jr 33:25). True science tries to fine out what God put in the world(Ps 19:1). The Laws of nature are written by the hand of God in the language of Mathematics. Little science takes you away from God but more of it takes you to Him. Science brings men near to God(Ps 8:3,4).

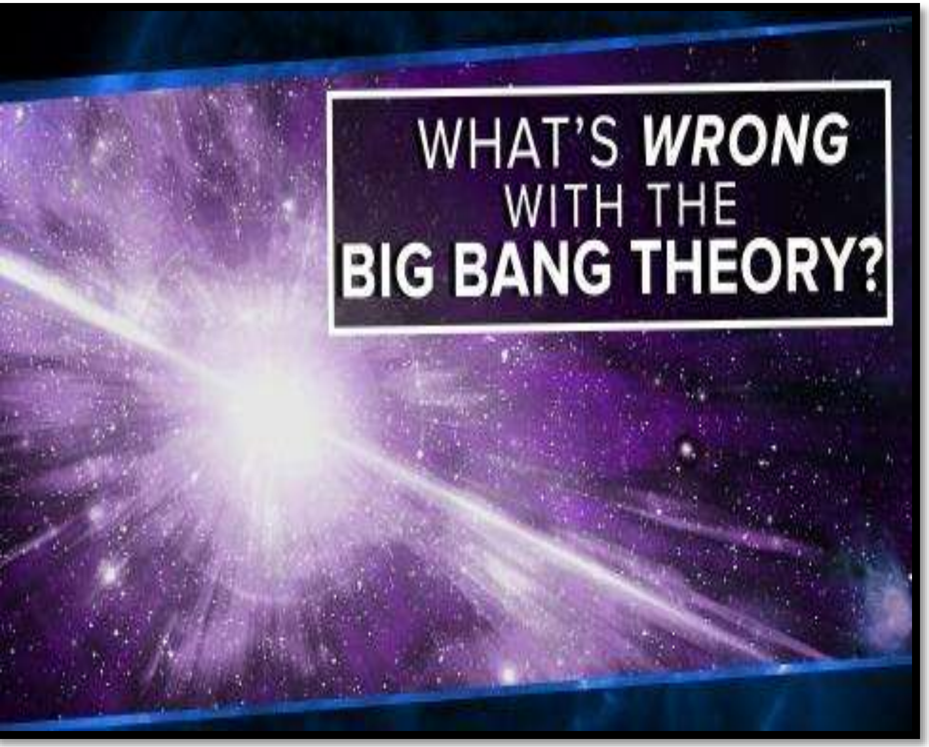


Fine Tuning or Intelligent Design: The universe is fine-tuned for our existence. The whole universe seems to be balanced on a knife edge. A very slight change in any of most of the fine-tuned factors, and the universe instantly falls apart. If the physical laws of the universe were different, there would be no life and no stars as we know them to provide energy to sustain human life. Certain features of the universe and of living things are best explained by an intelligent cause, not an undirected natural selection. The universe has an intelligent Designer(God). Ps 8:3,4.



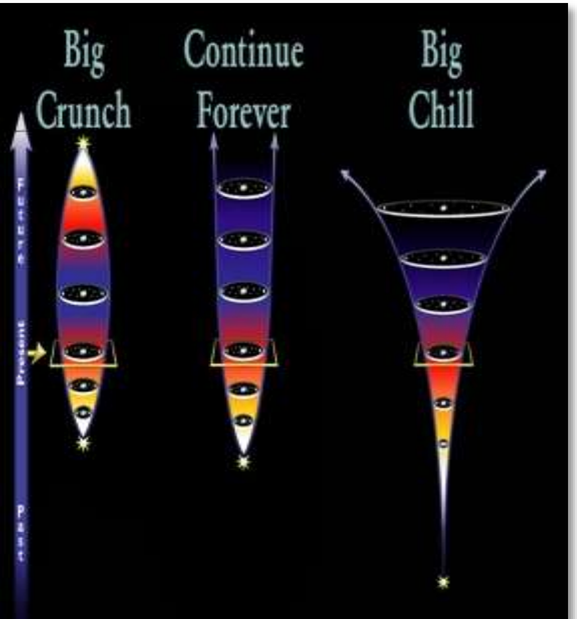


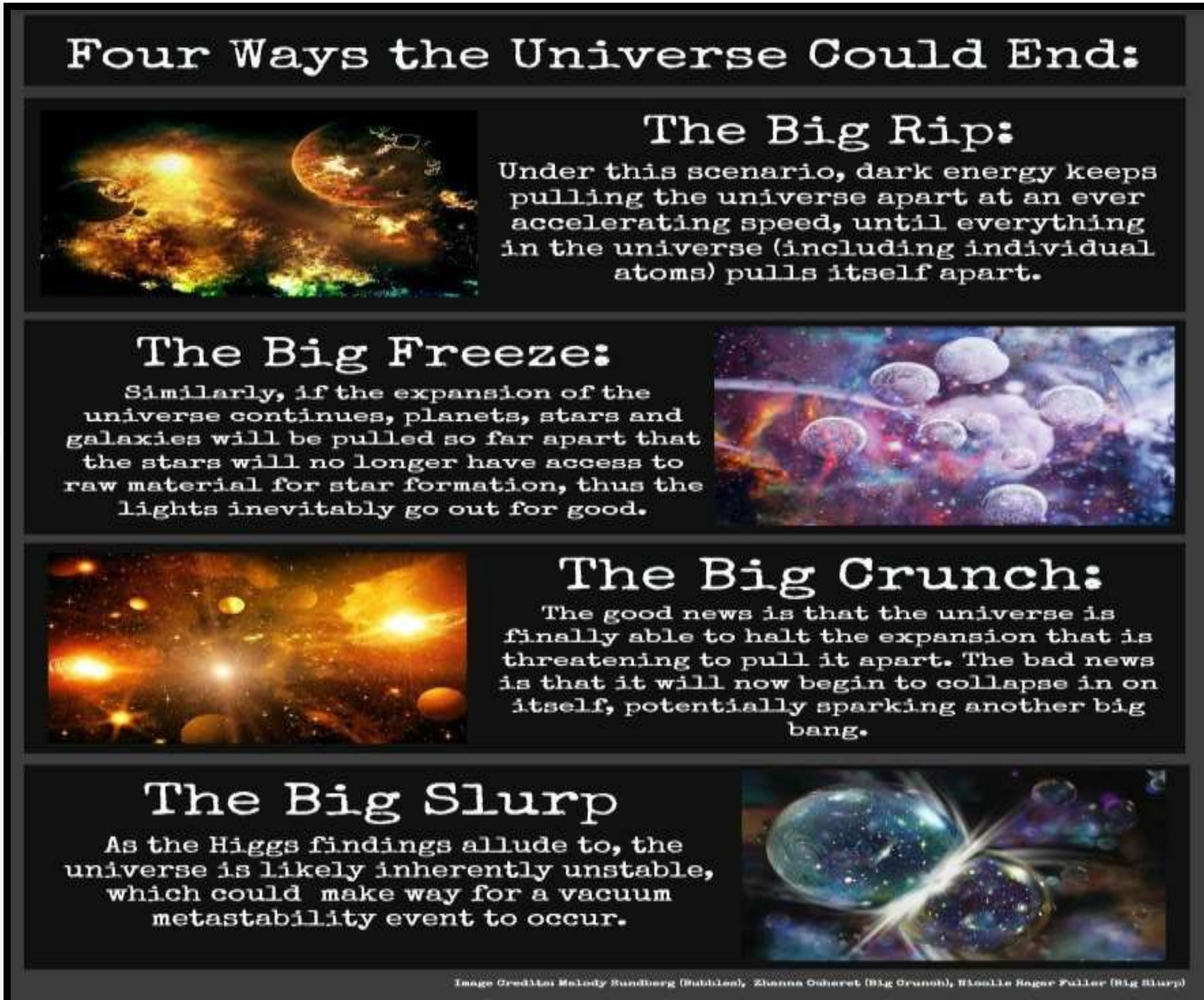
Limitations of Big Bang Theory:



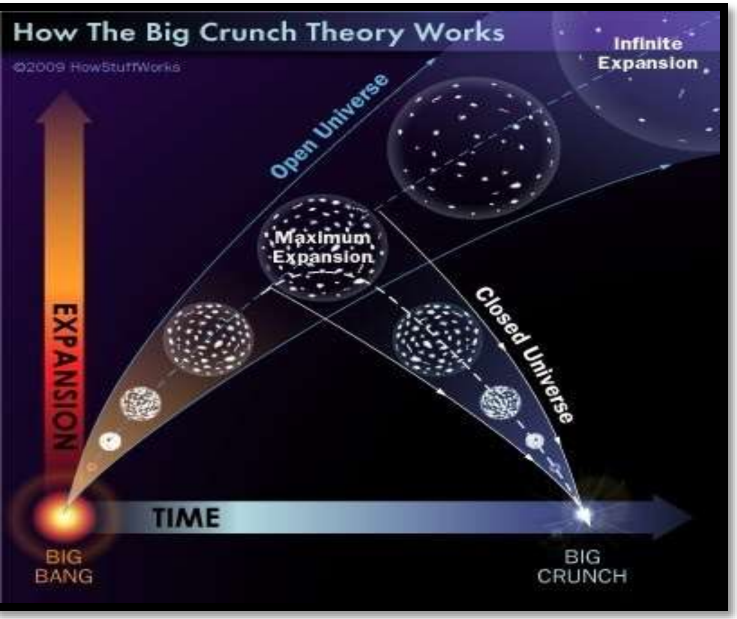
- <u>No Explanations</u>: Physics does not explain what's before the Big Bang and what caused the universe to come into existence. This theory explains what happened during and after that moment.
- <u>Not Sufficient Proof</u>: The Big Bang itself is not a sufficient explanation for the existence of the universe. It is based on evidence but also certain amount of theory.
- <u>Unanswered Questions</u>: The Big Bang today relies on a growing number of hypothetical entities, things we have never observed. It does not explain why the universe was born? Why is universe so close to being flat? Where are the magnetic monopoles? What particles makes up dark matter? What is dark energy? What did the universe expand? Where was the Big Bang? Where is the centre of the Universe? Why is the universe so large? Why does it contain so many particles?
- <u>No Purpose</u>: There are also two other scientific theories explaining how the universe could have been created. Big bang does not offer any sense of meaning or purpose to human life.

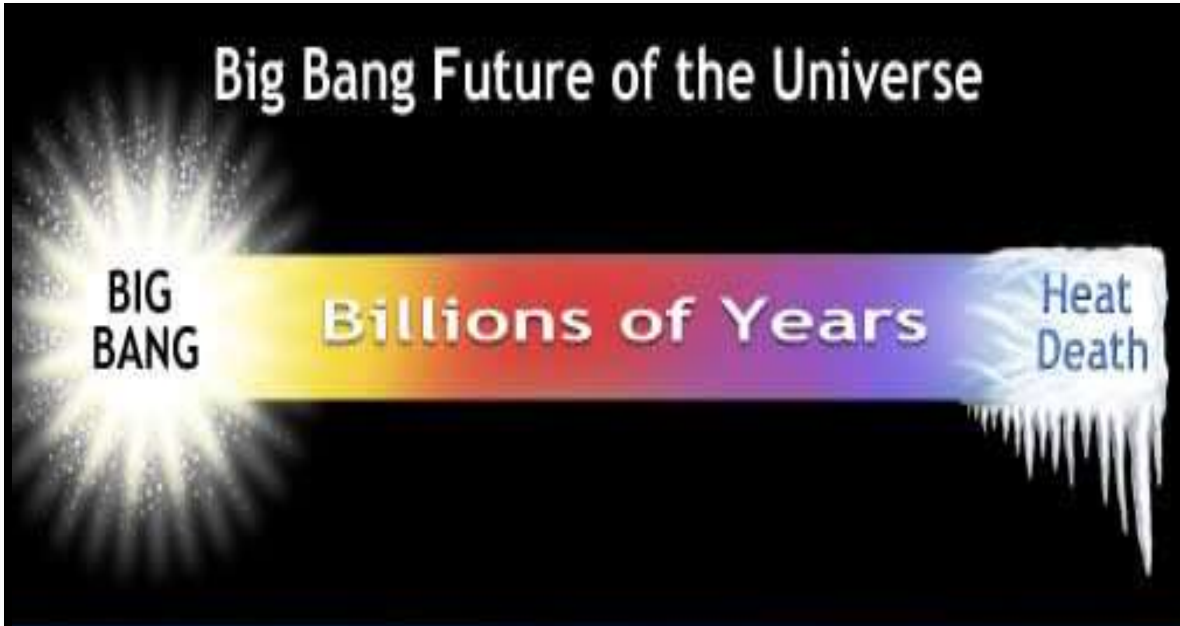
Future of the Universe / Big Crunch: The Big Crunch theory is based on Einstein's general relativity. It explains how the universe will end. It states that the universe will not continue to expand for ever. Eventually the expansion of the universe will collapse on itself forming a gigantic black hole. There is enough matter in the universe to slow its expansion. Gravity will then pull everything back together into one single point again. So universe will end.

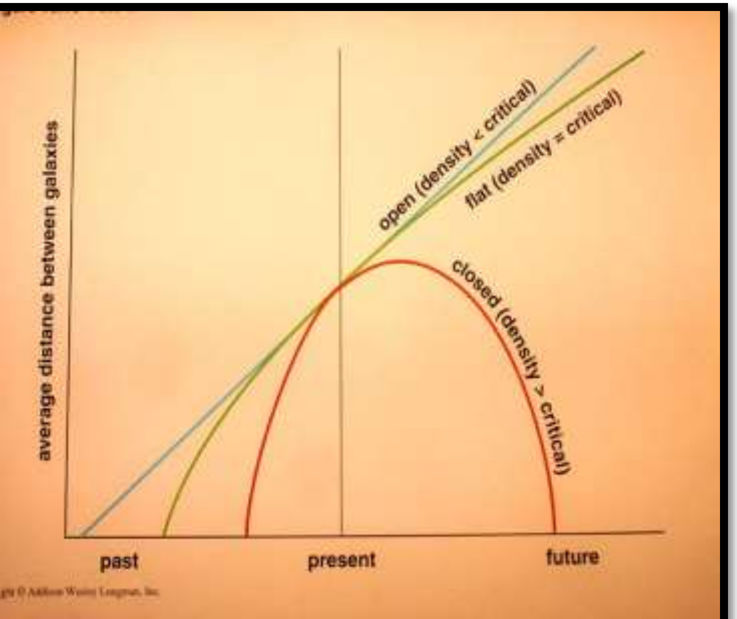




The Bible and the Big Crunch: The scientists have a similar prediction as the Biblical prophecy concerning the end of the universe. This universe will end in a roar and the elements will be destroyed in intense heat (2 Pt. 3:10, Isa 34:4). This world must come to an end.

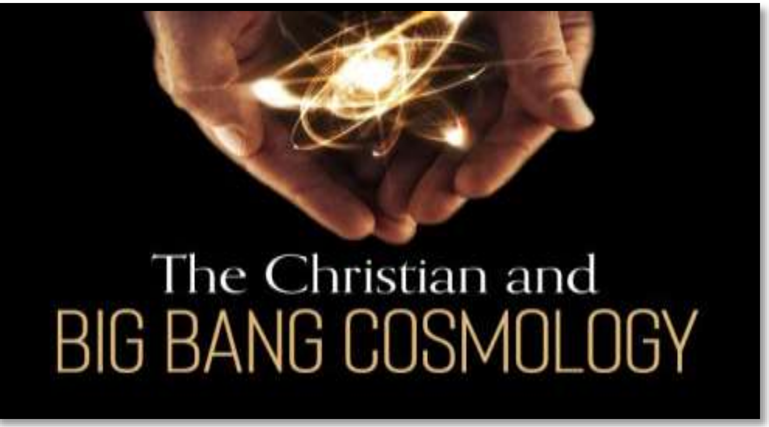






Can Science & Christianity Co-exist?: Creation talks about the glory of God and Science explains the handy work of God(Ps 19:1). A scientific discovery is also a religious discovery. There is no conflict between science and religion. Conflict only arises from an incomplete knowledge of either science or religion or both. Our knowledge of God is made larger with every discovery we make about the world. Science without religion is lame, religion without science is blind. Science can purify religion from error and superstition. Religion can purify science from idolatry and false absolutes.

Conclusion:



- **Religious Truth**: The Bible is a book of religious truths not scientific book. The Bible teaches about God not science. It talks about God, humanity and our relations with God. It still gives a message as to importance of human life. Science does not deal with truth. Science does not make value judgments or moral decisions. Timescale and size do not matter if you take a symbolic view of Genesis.
- **Hypothesis**: While the Big Bang is presently the dominant view, we should keep in mind that we are dealing with past events that are difficult to test and caution is warranted. There is much that we don't know. The Big Bang today relies on a growing number of hypothetical entities, things we have never observed. So it is still called a theory.
- **Why & How**: Religion and science can co-exist together because they each concern different areas and fields of human experience. Science explains how thing happen (mechanisms, processes) and the Religion explains why things happen(purpose, value).
- **Compatible with the Bible**: The Big Bang does not disprove The Bible. So Big Bang is compatible with the Bible. In fact, it proves several principles that have been in the scriptures for thousands of years.

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